



349248

# **Joliet Army Ammunition Plant Wilmington, Illinois**

## **Final Closure Report Sites L2, L5, L23A, M3, M4, and M12**

*Phase 2 Remedial Action  
Soils Operable Unit*

*Prepared for*  
***U.S. Army Corps of Engineers***  
***Louisville District***  
**Louisville, Kentucky**

**Total Environmental Restoration Contract  
DACW27-97-D-0015 Task Order 4016**

**October 2009**





**FINAL**

**CLOSURE REPORT**  
**SITES L2, L5, L23A, M3, M4, AND M12**

**PHASE 2 REMEDIAL ACTION**  
**SOILS OPERABLE UNIT**

**JOLIET ARMY AMMUNITION PLANT**  
**WILMINGTON, ILLINOIS**

**October 2009**

**Prepared For:**  
**U.S. Army Corps of Engineers**  
**Louisville District**  
**Louisville, Kentucky**

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**Prepared By:**  
**MWH**  
**Chicago, Illinois**

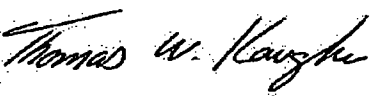
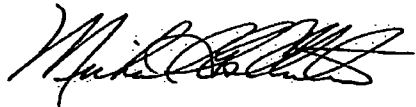
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**JOLIET ARMY AMMUNITION PLANT**  
**WILMINGTON, ILLINOIS**

**October 2009**

MWH certifies that, to the best of its knowledge and belief, the technical data delivered herewith under contract DACW27-97-D-0015 is complete, accurate, and complies with all requirements of the contract.

|              |   |                                  |
|--------------|---|----------------------------------|
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## EXECUTIVE SUMMARY

This Closure Report documents the successful removal of contaminated soils from Sites L2, L5, L23A, M3, M4, and M12 located at the former Joliet Army Ammunition Plant (JOAAP), Wilmington, Will County, Illinois. The *Record of Decision for the Soil Operable Unit Interim Sites* (U.S. Army, June 2004) (June 2004 ROD) identified final remedial goals (RGs) and the selected remedies for Soil Remedial Unit (SRU) 1 (SRU1) explosives-contaminated soils, SRU2 metals-contaminated soils, SRU3 explosives- and metals-contaminated soils, and SRU5 organics-contaminated soils at the above-listed sites. The *Record of Decision, Soil and Groundwater Operable Units, Manufacturing and Load-Assemble-Package Areas* (U.S. Army, October 1998) (October 1998 ROD) identified final RGs and selected remedies for SRU4 polychlorinated biphenyls (PCBs)-contaminated soils and SRU7 sulfur-impacted soils at the above-listed sites.

Remedial action (RA) activities at Sites L2, L5, L23A, M3, M4, and M12 were conducted from July 2006 to October 2007 in accordance with the methods established in the *Final Remedial Design / Remedial Action Workplan – Phase 2, Soils Operable Unit*, (MWH Americas, Inc. [MWH], October 2005) (Phase 2 - RD/RA Workplan).

Between July 2006 and October 2007, approximately 83,146 cubic yards (CY) of contaminated soils were excavated from Sites L2, L5, L23A, M3, M4, and M12 from the following SRUs:

- Approximately 1,001 CY of SRU1 soils from Sites L2 and M3
- Approximately 54,198 CY of SRU2 and SRU3 soils from Sites L2, L5, L23A, M3, M4, and M12
- Approximately 27,603 CY of SRU4 soils from Site L5
- Approximately 344 CY of SRU5 soils from Site L5
- All activities, as delineated in the Phase 2 – RD/RA Workplan, are considered complete and are presented in this Closure Report.

The SRU1 soils were delivered to the Site M4 Bioremediation Treatment Facility (BTF) for biological treatment. In accordance with the October 1998 ROD, treated soils were stockpiled in the “treated soil stockpile area” for future beneficial reuse as onsite backfill material. The SRU2, SRU3, SRU4, and SRU7 soils were excavated and disposed of at the Prairie View Recycling and Disposal Facility (RDF). Due to the small quantity of SRU7 soils (approximately 12 CY) at Site M12, SRU7 soils were combined with SRU2 soils for disposal. Remedial action activities included confirmation sampling at excavation areas consistent with the *Final Phase 2 - Soils Operable Unit Sampling and Analysis Plan* (Phase 2 - SAP) included as Appendix C in the Final Phase 2 - RD/RA Workplan. Confirmation



sampling has verified that remaining soils do not exceed SRU1, SRU2, SRU3, and SRU5 lower remediation goals (LRGs), upper remediation goals (URGs), or toxicity characteristic leaching procedure (TCLP) criteria established by the October 1998 and June 2004 RODs. The SRU7 soils were handpicked during a visual sweep of the area identified in the Phase 2 – RD/RA Workplan for Site M12.

Debris excavated during RA activities has been disposed at Prairie View RDF. Equipment utilized during RA activities at Sites L2, L23A, M3, M4, and M12 has been decontaminated. A final inspection was conducted by the United States Army Corps of Engineers (USACE) on September 18, 2009.

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## ACRONYMS AND ABBREVIATIONS

|           |   |
|-----------|---|
| 2,4-DNT   | 2,4-dinitrotoluene  |
| 2,6-DNT   | 2,6-dinitrotoluene  |
| AHA       | activity hazard analysis  |
| AST       | aboveground storage tank  |
| bgs       | below ground surface  |
| BMPs      | Best Management Practices   |
| BTF       | Bioremediation Treatment Facility   |
| COC       | contaminant of concern  |
| CY        | cubic yard  |
| CRZ       | contaminant reduction zone  |
| DNT       | dinitrotoluene  |
| DRO       | diesel range organics   |
| DVR       | Data Validation Report  |
| ESS       | Explosives Safety Submission  |
| FS        | feasibility study   |
| FSP       | Field Sampling Plan   |
| GOU       | Groundwater Operable Unit   |
| GRO       | gasoline range organics   |
| HRS       | hazard ranking system   |
| IC        | institutional control   |
| ISWQS     | Illinois Surface Water Quality Standards  |
| IEPA      | Illinois Environmental Protection Agency  |
| JOAAP     | Joliet Army Ammunition Plant  |
| LAP       | Load-Assemble-Package   |
| LRG       | lower remediation goal  |
| LUSE      | The LUSE Companies  |
| MD        | munitions debris  |
| MDL       | method detection limit  |
| MEC       | munitions and explosives of concern   |
| MEC/MPPEH | munitions and explosives of concern/material potentially representing an explosive hazard |
| MFG       | Manufacturing   |
| mg/kg     | milligrams per kilogram   |
| mg/L      | milligrams per liter  |
| MWH       | MWH Americas, Inc.  |
| N/A       | not applicable  |
| NPL       | National Priorities List  |
| OU        | Operable Unit   |
| PAH       | polycyclic aromatic hydrocarbon   |
| PCB       | polychlorinated biphenyl  |
| PCN       | polychlorinated naphthalene   |



## ACRONYMS AND ABBREVIATIONS (Continued)

|             |   |
|-------------|---|
| PL          | Public Law  |
| PM          | project management  |
| PPE         | personal protective equipment   |
| ppm         | parts per million   |
| QA          | quality assurance   |
| QA/QC       | quality assurance/quality control                                     |
| QAPP        | Quality Assurance Project Plan  |
| QC          | quality control   |
| RA          | remedial action   |
| RAO         | remedial action objective   |
| RCRA        | Resource Conservation and Recovery Act                                |
| RDF         | Recycling and Disposal Facility                                       |
| RD/RA       | remedial design/remedial action                                       |
| RDX         | Royal Demolition Explosive or hexahydro-1,3,5-trinitro-1,3,5-triazine |
| RG          | remedial goal   |
| RI          | remedial investigation  |
| RI/FS       | remedial investigation/feasibility study                              |
| ROD         | Record of Decision  |
| RR          | range residue   |
| SAP         | Sampling and Analysis Plan  |
| SB          | Storm Basin   |
| SF          | square feet   |
| SOU         | Soils Operable Unit   |
| SRU         | Soil Remedial Unit  |
| SSHP        | Site Safety and Health Plan   |
| STL         | Severn Trent Laboratories, Inc.                                       |
| SVOC        | semi-volatile organic compound  |
| SWPPP       | Storm Water Pollution Prevention Plan                                 |
| TBD         | to be determined  |
| TCLP        | toxicity characteristic leaching procedure                            |
| TERC        | Total Environmental Restoration Contract                              |
| TestAmerica | TestAmerica Analytical Testing Corporation                            |
| TNB         | 1,3,5- trinitrobenzene  |
| TNT         | 2,4,6- trinitrotoluene  |
| TPH         | total petroleum hydrocarbons  |
| TSCA        | Toxic Substances Control Act  |
| TSS         | total suspended solids  |
| URG         | upper remediation goal  |
| U.S.        | United States   |
| USACE       | United States Army Corps of Engineers                                 |
| USAE        | USA Environmental, Inc.   |



**ACRONYMS AND ABBREVIATIONS  
(Continued)**

|         |  |
|---------|--|
| USDA/FS | United States Department of Agriculture/Forest Service |
| USEPA   | United States Environmental Protection Agency          |
| VA      | Veterans Affairs                                       |
| VOC     | volatile organic compound                              |
| WCLF    | Will County Landfill                                   |
| WCVEP   | Waste Classification and Volume Estimates Plan         |
| XRF     | x-ray fluorescence                                     |



## **1.0 INTRODUCTION**

MWH Americas, Inc. (MWH) has been contracted to provide remediation services at the Joliet Army Ammunition Plant (JOAAP) under the Total Environmental Restoration Contract (TERC) DACW27-97-D-0015. This Closure Report was authorized under Task Order 4016. MWH is providing technical and field support for the United States Army Corps of Engineers (USACE) – Louisville District during remedial action (RA) activities associated with the excavation and disposal of contaminated soil at Sites L2, L5, L23A, M3, M4, and M12.

This Closure Report summarizes construction and sampling activities for the excavation and disposal of Soil Remedial Unit (SRU)1 explosives-contaminated soils, SRU2 metals-contaminated soils, SRU3 explosives- and metals-contaminated soils, SRU4 polychlorinated biphenyl (PCB)-contaminated soils, SRU5 organics-contaminated soils, and SRU7 sulfur-impacted soils at Sites L2, L5, L23A, M3, M4, and M12 completed between July 2006 and October 2007. During the excavation of SRU4 soils at Site L5, soils contaminated with polychlorinated naphthalenes (PCNs) were detected during PCB-soils characterization sampling. The PCN-contaminated soils removal is also documented in this Closure Report. Remedial Action activities as delineated in the Phase 2 – RD/RA Workplan, are considered complete and are presented in this Closure Report.

### **1.1 FACILITY DESCRIPTION AND BACKGROUND**

Joliet Army Ammunition Plant is a former United States (U.S.) Army munitions facility located on approximately 36 square miles (23,542 acres) of land in Will County, Illinois (Figure 1-1). The site is located approximately 3 miles north of Wilmington, Illinois, a community of 5,134 residents.

Joliet Army Ammunition Plant was constructed during World War II for manufacturing, loading, assembling, packing, and shipping of bombs, projectiles, fuses, and supplementary charges. The production output at JOAAP varied with the demand for munitions. Although the plant was used extensively during World War II, in 1945, all production of explosives was halted, the sulfuric acid and ammonium nitrate plants were leased out, and the remaining production facilities were put in layaway status. The installation was reactivated during the Korean War, and again during the Vietnam War. Production at the plant gradually decreased until it was stopped completely in 1977. Since then, various defense contractors under facility-use contracts have utilized some areas of the installation. In April 1993, JOAAP property was declared as excess by the Army and has been maintained by a small staff under liquidation status. The facility is not capable of explosives production and is undergoing transfer of use to other agencies and organizations in accordance with Public Law (PL) 104-106.



This law, entitled the Illinois Land Conservation Act of 1995, PL 104-106, Div. B, Title 2901-2932, Feb 10, 1996, stated that the U.S. Army will transfer JOAAP land to various federal, local, and state jurisdictions. Approximately 19,100 acres will be transferred to the United States Department of Agriculture/Forest Service (USDA/FS) for establishing the Midewin National Tallgrass Prairie, 982 acres will be transferred to the Department of Veterans Affairs (VA) to establish a Veterans Cemetery, 455 acres will be transferred to Will County, Illinois, to establish the Will County Landfill (WCLF), and 3,000 acres will be transferred to the State of Illinois to establish two industrial parks. As of September 2005, the Army had already transferred 17,726 acres to the USDA/FS, 982 acres to the VA, 455 acres to Will County, Illinois, and 2,650 acres to the State of Illinois.

Prior to the JOAAP property transfer process, during the time when the plant was fully operational, it was divided into two main function areas: the Load-Assemble-Package (LAP) Area, located east of Route 53, and the Manufacturing (MFG) Area, located west of Route 53. The MFG Area, which covers approximately 14 square miles, is where the chemical constituents of munitions, propellants, and explosives were manufactured. The production facilities were located in the northern half of the MFG Area. On the southern half of the MFG Area, there were extensive explosives storage facilities. The LAP Area, which covers approximately 22 square miles, is where munitions were loaded, assembled, and packaged for shipping. This area of JOAAP contained munitions, filling and assembly lines, storage areas, and a demilitarized area.

## **1.2 SITE OPERATIONS BACKGROUND**

### **1.2.1 Site L2**

Site L2 (Explosives Burning Grounds) is located in the west central-portion of the LAP Area, adjacent to Prairie Creek and Kemery Lake (Figure 1-2). The operational area for SRU1 soil covers approximately five acres and consists of six east-west burning pads, on which explosives and associated waste from other LAP Areas sites were burned. In addition to the east-west burning pads the north-south burning pads located east of the east-west burning pads were to be investigated by characterization sampling. Three popping furnaces, where small ammunition was detonated, were located at the southwest corner of the site.

Analytical results of soil samples collected at Site L2 indicated that the majority of the burning pads area are contaminated with 2,4-dinitrotoluene (2,4-DNT), 2,6-dinitrotoluene (2,6-DNT), and Royal Demolition Explosive (RDX). Munitions and explosives of concern (MEC) items, including fuses and other items, have also been identified to be present at the burning pads. It was estimated that 16,000 cubic yards (CY) of soil from the burning pads would be excavated and mechanically screened for MEC, and 10,000 CY of SRU1 soils would be sent to the Site M4 Bioremediation Treatment Facility (BTF) for treatment.



Levels of arsenic, cadmium, and lead in soil surrounding the popping furnaces were shown to exceed the upper remediation goals (URGs). Based on analytical data, surface contamination from arsenic, cadmium, and lead was assumed to extend to 1 foot below ground surface (bgs), representing a volume of 700 CY. Soil near the popping furnaces at Site L2 may be contaminated with Resource Conservation and Recovery Act (RCRA) characteristic hazardous wastes for cadmium (RCRA waste code D006) and lead (RCRA waste code D008).

Based upon remedial investigation (RI)/feasibility study (FS) (RI/FS) data, an area in the southwest corner of the burning pads was identified with elevated concentrations of lead requiring excavation. Phase 1 RI sample AC102 (lead = 500 milligrams per kilogram [mg/kg]) and FS sample SS748 (lead = 2,050 mg/kg) indicate lead concentrations above the URG designated in the June 2004 Record of Decision (ROD). This area has been identified for excavation and disposal as commingled metals- and explosives-contaminated soils.

In summary, 10,000 CY of SRU1 soils and 700 CY of SRU2 soils were estimated by the June 2004 ROD to be at Site L2. Location of these contamination areas and site features is detailed on Figure 1-3.

#### **1.2.2 Site L5**

Site L5 (Salvage Yard) was used for salvage and open storage of miscellaneous materials from the installation. It is approximately 16 acres and is located in the northwestern corner of the LAP Area along Hoff Road (Figure 1-2). Metal waste from the popping furnaces at the Explosive Burning Grounds (Site L2) was reportedly sent to Site L5 when JOAAP was in operation. Three areas of concern within Site L5 were identified in aerial photographs: the junk pile located in the southeast portion of the site, the ditch located along side the railroad tracks, and a storage yard for railroad ties.

The former oil spill area adjacent to Building 26-3 contains surface soil that exceeds the total petroleum hydrocarbons (TPH) URG of 2,500 mg/kg. The spill area is estimated to cover less than 100 square feet (SF). One soil core, SC591, was collected in the oil spill area during the PH1 RI (Dames & Moore, 1993). Samples were collected at 0, 2.5, and 5 feet bgs and were analyzed for explosives, anions, metals, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), TPH, and PCBs/pesticides. During the Phase 2 RI (Dames & Moore, 1994), three soil cores (SC809, SC810, and SC811) were advanced around the perimeter of the oil spill to define the lateral extent of contamination. Samples were collected at 0 and 2.5 feet bgs and were analyzed for TPH, SVOCs, and metals. Additional surface soil samples were collected during the Waste Classification and Volume Estimates Plan (WCVEP) investigation to refine the estimated volume of TPH-contaminated soil at the oil spill area (Dames & Moore, 1995). Eight surface soil samples (SS719 to SS724 and duplicate samples SS719D and SS723D) were collected around the former oil spill area and analyzed for TPH. The volume of TPH-contaminated soil in the oil spill area of Site L5 was estimated to be 200 CY and was limited to soil 1 foot in depth.



In the former Junk Pile Area, lead contamination exceeding the URG is primarily limited to surface soil with deeper hot spots located within the surface area. An estimated 1,965 CY of SRU2 soils will require excavation from the Junk Pile Area. In the former Junk Pile Area at Site L5, RCRA hazardous wastes may be present in the form of toxicity characteristic leaching procedure (TCLP)-extractable lead (RCRA waste code D008) and TCLP-extractable cadmium (RCRA waste code D006). The soil may also contain PCBs, which are regulated as Toxic Substances Control Act (TSCA) hazardous substances. The source of the PCBs is suspected to be from a former transformer.

Metals contamination exceeding URGs in the ditch and storage yard areas is primarily limited to surface soil. An estimated 100 CY of soil would be excavated from these areas during RA activities. Single sample point anomalies exceeding SRU2 URGs were also detected at the site during RI/FS sampling events. Excavation volumes from anomalies at the site were estimated to be 100 CY. Approximately 2,165 CY of SRU2 soils above URGs were to be excavation at Site L5.

Location of these contamination areas and site features are shown on Figure 1-4.

### **1.2.3 Site L23A**

Site L23A is approximately 1 acre and is located in the northeastern corner of the LAP Area along Chicago Road (Figure 1-2). A historic aerial photograph from 1946 identified a small (less than 0.5 acres) disposal pit located in the southwestern corner of Site L23A. The materials placed in the pits are unknown. Aerial photos indicate that disposal activities had ceased by 1952. Seven soil cores were advanced within and around the disposal pit at Site L23A.

Based on the combined data of previous investigations, the geophysical survey of the site, and information obtained from aerial photographs, the volume of lead-contaminated soil at Site L23A was assumed to extend across the center of the disposal pit and the area north of the pit (approximately 100 feet north-south by 150 feet east-west) to a depth of 6 feet. The volume of impacted soils at Site L23A was estimated to be 3,300 CY. No RCRA-hazardous wastes were identified at Site L23A.

Location of the contaminated areas and site features are shown on Figure 1-5.

### **1.2.4 Site M3**

Site M3 (Flashing Grounds) covers an area of approximately 66 acres located in the west-central portion of the MFG Area adjacent to Grant Creek (Figure 1-2). Between 1942 and 1988, the principal activity at M3 was the flash burning of equipment and demolition of materials to remove explosives residue. The flash burning was performed at two primary locations within a 6-acre fenced area. An area of explosives-stained soil, where trucks were washed after dumping explosives materials, is located between the primary burning pads and a dumping area/pad.



The vertical extent of lead contamination was assumed to be limited to a depth of 1 foot based upon the non-intrusive nature of flashing operations.

Explosives and lead contamination are commingled. The volume of SRU3 soils at Site M3 above URGs was estimated to be 2,000 CY. Site M3 may have soil contaminated with TCLP-extractable lead (RCRA waste code D008).

Locations of these contaminated areas and site features are detailed on Figures 1-6a and 1-6b.

#### **1.2.5 Site M4**

Site M4 (Lead Azide Area) is located in the west-central portion of the MFG Area and covers approximately 136 acres (Figure 1-2). The principal feature located in the western portion of Site M4 was the Lead Azide Lagoon. The Lead Azide Lagoon was used as a settling basin to store wastewater treatment sludge from the manufacturing and formulation of lead-based initiating compound prior to neutralization and subsequent discharge to Grant Creek. Any remaining lagoon sludge is classified as K046 hazardous waste.

Soil at Site M4 may contain TCLP-extractable lead (RCRA waste code D008) and lead wastewater treatment sludges (RCRA waste code K046). The ditch leading away from the lagoon towards Grant Creek also showed lead concentrations.

The volume of SRU2 soils at Site M4 above URGs was estimated to be 3,200 CY.

Locations of the contaminated areas and site features are shown on Figure 1-7.

#### **1.2.6 Site M12**

Site M12 (Sellite Manufacturing Area) is located in the northwestern portion of the MFG Area (Figure 1-2). Sellite was manufactured for use in the purification of crude 2,4,6-trinitrotoluene (TNT). Sellite consists of a solution of sodium sulfite and sodium sulfate. Site M12 includes two sellite production units, a wastewater lagoon, and associated drainage ditches.

The volume of SRU2 soils and sediments at Site M12 above URGs was estimated to be 3,200 CY and included both sediment in the lagoon and soil in the ditches. Soil at Site M12 may contain TCLP-extractable lead (RCRA waste code D008).

Raw sulfur was also identified in surficial soils at the site. The selected remedy to remediate raw sulfur at Site M12 was designated by the October 1998 ROD. Prior to excavation, a visual inspection would be conducted to identify any raw sulfur at the site. Any raw sulfur observed would either be handpicked or excavated, and properly disposed at an off-site facility.

Locations of the contaminated areas and site features are detailed on Figures 1-8a and 1-8b.



### **1.3 REGULATORY HISTORY**

Due to the presence of the soil contamination at JOAAP, the MFG Area of JOAAP was put on the National Priorities List (NPL) on July 21, 1987. The LAP Area of JOAAP was put on the NPL on March 31, 1989. The principle mechanism of the United States Environmental Protection Agency (USEPA) for placing sites on the NPL is the hazard ranking system (HRS). Site-specific HRS scores are determined by criteria designated by the USEPA. The HRS scores for the MFG and LAP areas were 32.08 and 35.23, respectively.

### **1.4 REMEDIAL INVESTIGATION ACTIVITIES**

Phase 1 and Phase 2 RIs were performed at the MFG and LAP areas. The findings of the RIs were used to develop FSs for both the MFG and LAP areas. The FSs were used to develop the October 1998 ROD and June 2004 ROD to document the final remedies for remediation of the Soils Operable Unit (SOU).

Based on the RI/FS data, the June 2004 ROD classified areas within JOAAP according to similar contaminants. The June 2004 ROD also prescribed remedies for contaminated soil at the sites. This prescribed work included removal of concrete floor slabs, removal of visible contamination, and removal of contaminated soils above lower remediation goals (LRG), URG, and TCLP criteria from designated locations. The June 2004 ROD identified the prescribed remedy or method of remediation as excavation and treatment for SRU1 and SRU5 soils and excavation and disposal for SRU2 and SRU3 soils. The 1998 ROD identified the prescribed remedy or method of remediation as excavation and disposal for SRU4 and SRU7 soils.

The June 2004 ROD also identified isolated points of contamination, "anomalies," where the URG was exceeded, but no source of contamination or release area could be identified from historical operations information or sampling data. No anomalies were present at Sites L2, L23A, M3, M4, and M12. Three anomalies are present at Site L5.

Remedial investigation and FS activities identified the following SRU1, SRU2, SRU3, SRU4, SRU5, SRU7, and anomaly contaminants of concern (COCs) at Sites L2, L5, L23A, M3, M4, and M12 based upon their chemical-specific LRGs, URGs, and TCLP regulatory criteria:



| Compound                                      | LRG<br>(mg/kg) | URG<br>(mg/kg) | RCRA TCLP<br>Regulatory Level<br>(mg/L) |
|---|----------------|----------------|---|
| <b>Explosives</b>                             |                |                |   |
| 1,3,5-Trinitrobenzene (TNB)                   | 17             | 386            | ---                                     |
| 2,4,6-Trinitrotoluene (TNT)                   | 200            | 459            | ---                                     |
| 2,4-Dinitrotoluene (2,4-DNT)                  | 20             | 20             | 0.13                                    |
| 2,6-Dinitrotoluene (2,6-DNT)                  | 20             | 20             | ---                                     |
| Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) | 107            | 125            | ---                                     |
| <b>Metals</b>                                 |                |                |   |
| Antimony                                      | 50             | 757            | ---                                     |
| Arsenic                                       | 21             | 84             | 5                                       |
| Barium  | 625            | 1,950          | 100                                     |
| Cadmium                                       | 63             | 220            | 1                                       |
| Chromium                                      | 213            | 213            | 5                                       |
| Copper  | 190            | 925            | ---                                     |
| Lead  | 500            | 500            | 5                                       |
| Nickel  | 210            | 2,090          | ---                                     |
| Silver  | 16             | 9,467          | 5                                       |
| Thallium                                      | 0.68           | 86             | ---                                     |
| Zinc  | 720            | 2,500          | ---                                     |
| <b>PCBs</b>                                   |                |                |   |
| Aroclor 1016                                  | 1              | 1              | ---                                     |
| Aroclor 1254                                  | 1              | 1              | ---                                     |
| Aroclor 1260                                  | 1              | 1              | ---                                     |
| <b>PAHs</b>                                   |                |                |   |
| Acenaphthene                                  | 98,386         | 98,386         | ---                                     |
| Acenaphthylene                                | ---            | ---            | ---                                     |
| Anthracene                                    | 491,930        | 491,930        | ---                                     |
| Benzo(a)anthracene                            | 17             | 17             | ---                                     |
| Benzo(a)pyrene                                | 2              | 2              | ---                                     |
| Benzo(b)fluoranthene                          | 17             | 17             | ---                                     |
| Benzo(ghi)perylene                            | ---            | ---            | ---                                     |
| Benzo(k)fluoranthene                          | 171            | 171            | ---                                     |
| Chrysene                                      | 1,708          | 1,708          | ---                                     |
| Dibenzo(a,h)anthracene                        | 1.7            | 1.7            | ---                                     |
| Fluoranthene                                  | 65,591         | 65,591         | ---                                     |
| Fluorene                                      | 65,591         | 65,591         | ---                                     |
| Indeno(1,2,3-cd)pyrene                        | 17             | 17             | ---                                     |



| Compound      | LRG<br>(mg/kg) | URG<br>(mg/kg) | RCRA TCLP<br>Regulatory Level<br>(mg/L) |
|---------------|----------------|----------------|---|
| Naphthalene   | 32,793         | 32,793         | ---                                     |
| Phenanthrene  | ---            | ---            | ---                                     |
| Pyrene        | 49,193         | 49,193         | ---                                     |
| <b>Sulfur</b> |                |                |   |
| Sulfur        | a              | a              | ---                                     |

Notes:

--- Not established  
a visual removal  
mg/L milligrams per liter  
PAHs polycyclic aromatic hydrocarbon

Based upon data from the RI/FS, the Phase 2 - Remedial Design/Remedial Action (RD/RA) Workplan was developed in accordance with the provisions detailed in the June 2004 ROD to address site specific COCs above the established LRG and URG criteria. Refer to Figures 1-3 through 1-8b for the location of areas of SRU1, SRU2, SRU3, SRU4, SRU5, SRU7, and anomaly soils contamination as described in the Phase 2 - RD/RA Workplan.

## 1.5 OPERABLE UNIT DESIGNATION

The contaminated media identified at JOAAP was divided into two Operable Units (OUs) to aid in the development and evaluation of remedies. The SOU consists of all sites where contaminated soils, sediments, and debris were identified. The Groundwater Operable Unit (GOU) consists of all sites where contaminated groundwater was identified.

While two OUs were created, it is important to note that cleanup of groundwater contamination within Sites L2 and M3 (the only sites listed in this Closure Report, which are in the GOU) is limited to monitoring and natural attenuation. The RA performed at Sites L2, L5, L23A, M3, M4, and M12 has been under the SOU. The removal of contaminated soil was implemented to minimize any potential for a continued source of contamination to affect the groundwater.

The June 2004 ROD identified 14 SOU sites requiring remediation of contaminated soil and debris. Four SRU designations were used to classify the Phase 2 RA sites according to the nature of contaminants.

- SRU1 - Explosives in Soil
- SRU2 - Metals in Soil
- SRU3 - Explosives and Metals in Soil
- SRU5 - Organics in Soil



The October 1998 ROD identified final remedies for the following SOU contaminant groups:

- SRU4 - Polychlorinated Biphenyls in Soil
- SRU6 - Landfills
- SRU7 - Sulfur in Soil

Due to the nature of activities conducted at many of the SOU sites, multiple contaminants are potentially present at any particular site.

The LRG and URG criteria established for Sites L2, L5, L23A, M3, M4, and M12 have been developed and based on the intended use of the land as a tallgrass prairie following transfer of the property.

## **1.6 REPORT ORGANIZATION**

This Closure Report is divided into ten sections as follows:

- Section 1.0 - Introduction: Facility background, history, previous activities, and report organization.
- Section 2.0 - Operable Unit Background: ROD requirements, basis for cleanup goals and future land use, and remedial design summary.
- Section 3.0 - Remedial Action Construction Activities: Provides detailed information of the construction events from mobilization to demobilization.
- Section 4.0 - Chronology of Events: Provides a table of important project dates.
- Section 5.0 - Performance Standards and Construction Quality Control: Provides information on the remedy selection performance and quality assurance/quality control (QA/QC), and data quality requirements.
- Section 6.0 - Final Inspection and Certifications: Documentation of inspection dates.
- Section 7.0 - Operation and Maintenance Activities: Provides information on monitoring and maintenance of the site until final property transfer.
- Section 8.0 - Operable Unit Contact Information: Provides names, addresses, and phone numbers of USACE and regulatory personnel responsible for closure at the sites.



- Section 9.0 - Summary and Conclusions: Provides a brief concluding statement and recommendations for future RA sites.
- Section 10.0 - References: List of documents used in preparing this report.

[END OF SECTION]



## **2.0 OPERABLE UNIT BACKGROUND**

The following is a summary of the RA activities required by the October 1998 and June 2004 RODs for Sites L2, L5, L23A, M3, M4, and M12 soils, the remedial design, and the future land usage of the sites.

### **2.1 RECORD OF DECISION REQUIREMENTS**

Described below are the RA components for the remedial alternative selected for Sites L2, L5, L23A, M3, M4, and M12 according to the October 1998 and/or June 2004 RODs:

- Building Demolition
- Pre-sampling, Soil Excavation, Transportation, and Confirmation Sampling
- Soil Preparation
- Bioremediation
- Backfilling, Regrading, and Revegetating Excavated Areas
- Soil Disposal
- Treatment Area Decommissioning
- Land Transfer Documentation

#### **2.1.1 Building Demolition**

The June 2004 ROD determined that some existing building components and structures identified in the RI/FS were to be demolished prior to excavating contaminated soil. These buildings were to be removed and salvaged. If the building debris could not be salvaged, it was to be disposed at the Prairie View Recycling and Disposal Facility (RDF).

#### **2.1.2 Pre-sampling, Soil Excavation, Transportation, and Confirmation Sampling**

The June 2004 ROD required contaminated soils to be delineated through pre-sampling, excavated, and loaded into hauling trucks. The SRU1 and SRU5 soils were to be transported to a central treatment area while SRU2 and SRU3 soils were to be transported to a disposal location. Limits of excavation were to be based the Phase 2 - RD/RA Workplan, visual observation, and field screening data. Confirmation sampling was to be performed for identified COCs. The June 2004 ROD estimated 10,000 CY of SRU1 soils, 12,565 CY of SRU2 soils, 2,000 CY of SRU3 soils, and 200 CY of SRU5 soils were to be removed from Sites L2, L5, L23A, M3, M4, and M12.

The October 1998 ROD estimated 1,965 CY of SRU4 soils and 1,400 CY of SRU7 soils were to be removed from Sites L5 and M12, respectively.

#### **2.1.3 Soil Preparation**

The June 2004 ROD required contaminated soils to be screened to remove large debris and blended to homogenize the soil contamination concentrations at the excavation site or the



stockpile area. Trucks were required to be properly decontaminated prior to exiting the stockpile area. Munitions and explosives of concern, if found, were required to be screened and removed for open burn/detonation or for off-site incineration. Raw TNT, if encountered, was required to be processed for treatment or disposal at a permitted off-site facility; processed for blending back into soils for treatment at the Site M4 BTF; or turned over to the Bureau of Alcohol, Tobacco, and Firearms.

#### **2.1.4 Bioremediation**

The June 2004 ROD required that SRU1 and SRU5 soils be treated using a bioremediation treatment process. The contaminated soils were to be sent to a central treatment area (later designated as the Site M4 BTF) where the material could be stockpiled and screened prior to treatment. Storm water runoff would be contained within the central treatment area.

#### **2.1.5 Backfill, Grading, Vegetating Excavated Areas**

The June 2004 ROD stated that excavated areas were to be backfilled and graded to promote safety, prevent ponding, and provide for surface drainage. The source of backfill soil was to be from an on-site (JOAAP) borrow location. Backfill material was also utilized from the surrounding topography of excavations once confirmation samples indicated soils were below LRG and URG criteria. Revegetation, if implemented, was to be coordinated with the USDA/FS to verify the vegetation is consistent with the future intended use in the Midewin National Tallgrass Prairie.

#### **2.1.6 Soil Disposal**

The SRU1 soils excavated from Site L2 were designated for bioremediation to levels below industrial RGs as established in the October 1998 ROD. The SRU5 soils excavated from Site L5 were designated for bioremediation to levels below LRG and URG criteria established in the June 2004 ROD. Once contaminant levels were determined to be below established treatment goals, the treated soils could be used as on-site backfill or for other approved uses.

The SRU2, SRU3, and SRU7 soils excavated from Sites L2, L5, L23A, M3, M4, and M12 were to be disposed of at an approved off-site RCRA Subtitle D facility as special waste.

The SRU4 soils excavated from Site L5 were to be disposed of at a facility appropriate for the level of PCBs in the material. For soil and debris with PCB concentrations less than 50 parts per million (ppm), disposal was to be at a RCRA Subtitle D permitted facility. For soil and debris greater than 50 ppm, disposal was to be either at a TSCA permitted facility or at a RCRA Subtitle C facility. The PCN-contaminated soils were to be disposed of in the same manner as SRU4 soils.

#### **2.1.7 Treatment Area Decommissioning**

When treatment of all SRU1 and SRU5 soils was completed, the Site M4 BTF area and associated facilities were to be disassembled, decontaminated, and salvaged.



### **2.1.8 Land Transfer Documentation**

Sites L2, L5, L23A, M3, M4, and M12 are to be transferred to the USDA/FS for establishing the Midewin National Tallgrass Prairie for future recreational use. No formal deeds are required according to the June 2004 ROD as the land is being transferred from one Federal agency to another. However, any required institutional controls (ICs) are to be documented into the U.S. Army conveyance documents to inform the USDA/FS of the applicable land use restrictions. The selected RGs and remedial action objectives (RAOs) were specifically designed to be protective of human and ecological prairie receptors, and are not intended for unrestricted exposure scenarios. The institutional control objectives are as follows:

- Prevent unrestricted exposure to soils with residual contamination above unlimited reuse levels.
- Prevent the development and use of property for residential housing, elementary and secondary schools, childcare facilities, or playgrounds, or industrial uses.

The restrictions to meet these objectives include but may not be limited to the following:

- Land designated for the USDA cannot be used for industrial or residential use.
- Groundwater restrictions apply to Sites L2 and M3 (Section 7.1).
- Future excavation restrictions may apply to Site L2 based upon the results of characterization and MEC removal activities at those sites.

The ICs prescribed in the October 1998 and June 2004 RODs are to be continued until the concentrations of the hazardous substances in the soil and/or groundwater are reduced to levels that allow for unlimited exposure and unrestricted use, and regulatory agreement is reached.

The USDA/FS will be requested to incorporate and memorialize the land and groundwater restrictions in their official land management plans to ensure that the Phase 2 RA sites shall be used solely for tallgrass prairie purposes, consistent with those described in Public Law 104-106 Title 29, and not for industrial or residential purposes.

The USDA/FS will annually provide a copy of the Prairie Management Plan report to the U.S. Army, USEPA, and Illinois Environmental Protection Agency (IEPA). This report will address current and anticipated land use activities conducted at tallgrass prairie sites. In addition, this report will demonstrate that the land and groundwater uses remain the same and that integrity of the land and groundwater use restrictions has not been compromised. If the annual report identifies incompatible uses or violations of the land and groundwater use restriction, the USDA/FS will take appropriate action to correct the land and groundwater use violations.



## **2.2 BASIS FOR DETERMINING CLEANUP GOALS AND FUTURE LAND USE**

### **2.2.1 Cleanup Goals**

The primary objective of the cleanup at JOAAP was to effectively mitigate, minimize threats to, and provide adequate protection of human health and the environment. Human health risk models and other appropriate USEPA and IEPA criteria were used to establish the LRGs and URGs for each of the COCs identified in soils at JOAAP. Final LRGs and URGs for soil were established for recreational land use (e.g., tallgrass prairie, hiking) scenarios. Exposure levels for ecological resources that are protective of the environment and compatible with development of the tallgrass prairie were determined for the USDA/FS lands and finalized in June 2004 ROD.

### **2.2.2 Future Land Use**

Sites L2, L5, L23A, M3, M4, and M12 are to be transferred to the USDA/FS for future recreational use within the Midewin National Tallgrass Prairie.

## **2.3 SUMMARY OF THE REMEDIAL DESIGN**

The June 2004 ROD-prescribed remedy was excavation and treatment for SRU1 soils at Site L2 and SRU5 soils at Site L5. Following excavation, soil was to be transported to the Site M4 BTF for treatment. All SRU1 and SRU5 soils were to be treated and stockpiled in the treated soil stockpile area pending determination of future use requirements.

The June 2004 ROD-prescribed remedy was excavation and disposal for SRU2 and SRU3 soils at Sites L2, L5, L23A, M3, M4, and M12. Following excavation, soil was to be transported and disposed at an off-site RCRA Subtitle D facility as special waste.

The October 1998 ROD-prescribed remedy was excavation and disposal for SRU4 soils at Site L5. Following excavation, the soil was to be transported and disposed at either a RCRA Subtitle D permitted facility (if concentrations were less than 50 ppm) or a TSCA-permitted facility or RCRA Subtitle C facility (if concentrations were greater than 50 ppm).

The October 1998 ROD-prescribed remedy was excavation and disposal of SRU7 soils at Site M12. Following excavation, soil was to be transported and disposed at an off-site RCRA Subtitle D facility as special waste.

### **2.3.1 Delineation Activities**

As indicated on Figures 1-3 through 1-8b, the excavation areas are horizontally delineated showing the approximate excavation depth and type of contamination. Field staking was to be used to delineate the excavation areas based on the Phase 2 - RD/RA Workplan drawings and field observations. Ensysis<sup>®</sup> test kit samples were to be used to approximate the vertical and lateral extent of TNT and dinitrotoluene (DNT) contamination exceeding LRG and URG criteria for SRU1 and SRU3 soils. A portable x-ray fluorescence (XRF) unit was to be used



to characterize metals constituents in release and anomaly areas. With the exception of lead, horizontal and vertical extent of metals contaminants at known release areas were to be approximated in the field using an XRF unit, with fixed laboratory samples used as final confirmation samples. At sites where a documented anomaly exists, an XRF unit was to be used to approximate the anomaly location with final confirmation samples (if an excavation was not conducted) sent to an off-site laboratory.

The Clor-n-soil<sup>®</sup> PCB Screening Kit was to be used to approximate the vertical and lateral extent of PCBs contamination exceeding LRG and URG criteria for SRU4 soils. Fixed laboratory samples were to be used as final confirmation samples.

The confirmation sampling procedures to determine the lateral and vertical extent of soils exceeding LRG and URG criteria are described in Section 2.3.3 of the Final Phase 2 - Soils Operable Unit Sampling and Analysis Plan (SAP) (Phase 2 - SAP) in Appendix C of the Phase 2 - RD/RA Workplan.

### **2.3.2 Soil Excavation**

Soil excavation activities at Sites L2, L5, L23A, M3, M4, and M12 were designed to be conducted using conventional excavation equipment. Excavated materials were to be loaded directly onto transport vehicles. Excavation activities were to be conducted at the various contamination areas to approximate depths and dimensions delineated on Figures 1-3 through 1-8b. Visual field observation and confirmation sampling were to be used to verify that the remaining soils in an excavation did not exceed LRG, URG, and TCLP criteria. Confirmation sampling for the excavation areas was to be conducted in accordance with the approved Phase 2 - SAP. If results of the confirmation sampling indicated that LRG, URG, and TCLP criteria were achieved, excavation activities were to be considered complete in the area. However, if confirmation sampling indicated that LRG, URG, and TCLP criteria were not met, additional excavation and confirmation sampling were to be implemented.

Averaging, where applicable, was permitted by the June 2004 ROD for contaminants in soils at concentrations that exceeded LRGs but did not exceed the URG or TCLP criteria in an area. The selected remedy in the June 2004 ROD required the excavation of impacted soils at an area until the average contaminant concentration was below the listed LRG. Chemical constituents, which had the same value for the LRG and URG (i.e., HMX, 2,4-DNT, 2,6-DNT, chromium, lead, PAHs, and PCBs), were required to be excavated at every point exceeding the established LRG/URG value. These points (exceeding the LRG/URG value) could not be included in the list of sample concentrations used for averaging.

### **2.3.3 Concrete Structures Removal**

Contamination along building footing walls existed at several of the sites. Removal of the building footing walls was not required in conjunction with the excavation activities; however, it was necessary to remove contaminated soil from the building walls during excavation activities. If the concrete footing wall remained in-place, the wall was to be cleaned with hand tools to remove any soil particles.



Removal of the building slabs at SRU2 and SRU3 sites was anticipated to remove soil contamination below the respective slabs. Concrete removed from these sites was to be hauled to the same approved off-site disposal facility designated for soil removed from the same individual contaminated area. Following removal of floor slabs, contaminated soil was to be excavated to remove soil exceeding cleanup goals, as verified using confirmation sampling.

#### **2.3.4 Debris Removal**

Excess debris that could be removed prior to excavation activities was to be placed in roll-off containers or hauling trucks and disposed at a permitted off-site facility. During RA activities, debris handled with the excavated SRU1 and SRU5 soils were to be hauled to the Site M4 BTF where mechanical separators could be used to separate the debris from the soil prior to the soil entering the bioremediation process. Debris handled with excavated SRU2 and SRU3 soils was to be placed in hauling trucks and disposed at a permitted facility.

#### **2.3.5 Site Mobility and Decontamination**

Prior to initiation of excavation activities, on-site roadways were to be developed, as necessary, to accommodate vehicular traffic to and from the excavation areas. Different hauling routes were proposed for the Sites L2, L5, L23A, M3, M4, and M12 and these are briefly discussed in the following subsections. Refer to Figure 1-2 for road names and locations discussed in the following subsections.

##### **2.3.5.1 Site L2**

For SRU1 soils, it was proposed that access to Site L2 would be from Hoff Road, Chicago Road, Central Road, and the access road at the southern perimeter of the site.

For SRU2 soils, it was proposed that access to Site L2 would be from Prairieview Lane, Road 2 West, Central Road, and the site access road at the southern perimeter of the site.

##### **2.3.5.2 Site L5**

It was proposed that access to Site L5 would be from Prairieview Lane, Road 2 West, Central Road, Chicago Road, Hoff Road, and the site access road at the northern perimeter of the site.

##### **2.3.5.3 Site L23A**

It was proposed that access to Site L23A would be from Prairieview Lane, Road 2 West, Central Road, Chicago Road, and the unnamed road from Chicago Road leading to the site.

##### **2.3.5.4 Site M3**

It was proposed that access to Site M3 would use Prairieview Lane, Arsenal Road, Route 53, Strawn Road, Baseline Road, Snake Road, Tetryl Road, West TNT Road, Blodgett Road, and the site access road at the northern perimeter of the site.



#### **2.3.5.5 Site M4**

It was proposed that access to Site M4 for the Lead Azide Lagoon excavations would use Prairieview Lane, Arsenal Road, Route 53, Strawn Road, Baseline Road, Snake Road, Tetryl Road, West TNT Road, and internal Site M4 BTF roadways. This transportation route was selected to minimize both the distance traveled on Route 53 and the amount of truck traffic crossing bridges at the MFG Area.

#### **2.3.5.6 Site M12**

It was proposed that access to Site M12 would use Prairieview Lane, Arsenal Road, Route 53, Strawn Road, Baseline Road, Snake Road, Tetryl Road, West TNT Road, and the access road at the eastern perimeter of the site. This transportation route was selected to minimize both the distance traveled on Route 53 and the amount of truck traffic crossing bridges at the MFG Area.

#### **2.3.6 Liquids Removal**

No settling boxes or sumps were expected to be encountered during excavation activities at Sites L2, L5, L23A, M3, M4, and M12. Any standing liquid that existed in depressions in contaminated areas was to be pumped and properly disposed prior to excavation or removal activities. If characterization results indicated that water quality criteria established in the October 1998 ROD, as well as any applicable Illinois Surface Water Quality Standards (ISWQS) were satisfied, then the water was to be directly discharged to existing drainage features on sites where RA activities were scheduled. Liquids that did not meet direct discharge criteria were to either be containerized and used for process water at the Site M4 BTF, discharged to Storm Basin -1 (SB-1) (for SRU1 sites only), or disposed at an appropriate facility.

#### **2.3.7 Health and Safety and Air Monitoring**

Work in the exclusion zones was to be conducted in Level C personal protective equipment (PPE). Personal protective equipment was to include Tyvek coveralls, rubber booties, nitrile gloves, and respiratory protection. The Phase 2 - Final Site Safety and Health Plan (SSHP) (Phase 2 - Final SSHP) (Appendix B, Final Phase 2 - RD/RA Workplan) addresses relevant potential health and safety issues during excavation activities.

Air monitoring was to be performed at the RA sites to assess whether emission of dust was a problem. A description of the relevant air monitoring procedures to be implemented is located in Section 6.10 of the Phase 2 - Final SSHP. The generation of dust particulates was expected to be minimal because the excavation activities at the sites are not considered mass excavation activities. If dust became a persistent problem, however, efforts were to be made to provide wetting for dust control purposes at the excavation areas.

On average, a 5-foot radius surrounding the active work area would be considered the exclusion zone. Particulate controls would be considered within this area.



### **2.3.8 Soil Stabilization**

If soil exceeded TCLP standards prior to excavation, it was to be treated in-situ using the MAECTITE<sup>®</sup> chemical treatment or similar process. This process consists of an in-situ chemical application and confirmation soil sampling. After confirmation sampling indicated achievement of successful treatment, soil was to be excavated. The stabilization process does not increase the material volume from the treatment application nor does it require hazardous material handling. The presence of clays or organic material in soil does not affect treatment. Uniform treatment and mixing was to be verified during the dose application process by the site superintendent and through the analytical results collected during treatment.

This method was not used during the activities described in this report. No soil sampling showed exceedences for TCLP standards that would require treatment before disposal.

### **2.3.9 Raw Product and Munitions and Explosives of Concern**

If raw TNT or DNT were encountered during excavation activities, the material was to be processed for treatment or disposal at a permitted off-site facility, or processed to be blended back into explosives-contaminated soil for treatment at the Site M4 BTF. At Site L2, MEC items, including fuses and other items, have been identified at the burning pads. Prior to initiation of RA activities or temporary road construction, MEC clearance activities were to be conducted as part of a separate removal action to remove potential MEC hazards from Site L2. Any MEC encountered during excavation activities will be managed in accordance with the Explosive Safety Submission (ESS).

### **2.3.10 Site Safety**

The RA activities scheduled at Sites L2, L5, L23A, M3, M4, and M12 included both physical and chemical hazards to workers. Information presented in the Phase 2 - Final SSHP details methods and procedures for maintaining a safe environment during RA activities.

### **2.3.11 Site Security**

Site security for Sites L2, L5, L23A, M3, M4, and M12 was to be implemented in accordance with Section 3.5 of the Phase 2 - RD/RA Workplan. During RA activities, the excavation areas were to be restricted to only those personnel directly associated with the work activities. Security gates were to be installed at critical access points to the sites, as necessary, to prevent unauthorized access. The gates were to remain open during working hours and be closed during non-working hours. The installation of additional site security fencing was not anticipated because each site was within secured areas at JOAAP. The use of temporary warning tape or protective fencing around excavation areas was to be used to prevent accidental entry into open trenches. Trenches would remain open until confirmation sampling verified that the excavations satisfied LRG, URG, and TCLP criteria.

### **2.3.12 Storm Water Management**

Storm water management for Sites L2, L5, L23A, M3, M4, and M12 was to be implemented in accordance with the Phase 2 - Storm Water Pollution Prevention Plan (Phase 2 - SWPPP) (Appendix D, Phase 2 - RD/RA Workplan). Silt fencing was to be used to control sediment runoff from excavation areas. Guidance related to Best Management Practices (BMPs) for



storm water control was presented in the Phase 2 - SWPPP. Sampling of drainage ditches and streams during rainfall events was to be conducted, as described in the Phase 2 - SAP, to verify that storm water management practices were effective.

### **2.3.13 Confirmation Sampling**

Following the initial excavations, confirmation sampling and testing was to be conducted by a combination of field laboratory analysis, on-site analysis, and off-site laboratory analysis, as described in the Phase 2 - SAP. During the confirmation sampling events, field-sampling technicians were to follow the manufacturers' instructions for test kit analysis and XRF unit implementation. The Phase 2 - SAP describes the sampling protocol to be implemented to verify that the remaining soils at Sites L2, L5, L23A, M3, M4, and M12 did not exceed LRGs, URGs, and TCLP criteria. Confirmation sampling results were to be used to determine if additional excavation was required at a remediation area.

Averaging of results was allowed for contaminants in soils at concentrations that exceed LRGs but do not exceed URGs or TCLP criteria in an area. The remedy selected in the June 2004 ROD includes the excavation of impacted soils at an area until the average contaminant concentration is below the LRG. Chemical constituents that have the same value for the LRG and URG (i.e., HMX, 2,4-DNT, 2,6-DNT, chromium, lead, PAHs, and PCBs) are required to be excavated at every point exceeding the established LRG/URG value and are not subject to averaging.

### **2.3.14 Transportation Activities**

Transport of soil and other materials from Sites L2, L5, L23A, M3, M4, and M12 was to be conducted in accordance with Section 3.4 of the Phase 2 - RD/RA Workplan. Soil and debris excavated from the contaminated areas was to be loaded directly into transport vehicles. Depending on the moisture content of the excavated soil, a determination was to be made in the field regarding necessity for lining of trucks prior to transport of excavated soil. Transport of excavated SRU1 and SRU5 soils from the various sites to the Site M4 BTF was to be conducted in accordance with Section 4.4.13 of the Phase 2 - RD/RA Workplan. Transport of excavated SRU2, SRU3, and SRU7 soils from various sites to the approved off-site disposal facility was to be conducted in accordance with Section 5.5 of the Phase 2 - RD/RA Workplan. Transport of excavated SRU4 soils from Site L5 to the approved off-site disposal facility was to be conducted in accordance with Section 5.3.1 of the Phase 2 - RD/RA Workplan.

### **2.3.15 Treatment Activities**

Excavated soil from SRU1 sites was to arrive at the Site M4 BTF and then be routed to the untreated centralized receiving/stockpile area. Soil was to be classified, segregated, and stockpiled at the receiving/stockpile area.

The SRU5 soils excavated during Phase 2 RA activities were to be staged at the Site M4 BTF Building #4 for treatment. Building #4 is a covered structure that would be used to eliminate contact of rainfall with untreated SRU5 soils, and resultant storm water runoff into SB-1.



Stockpiled soil at the Site M4 BTF was to be processed prior to bioremediation treatment, as described in Section 7 - Bioremediation Facility Design of the Phase 1 - RD/RA Workplan (Montgomery Watson, April 1999).

#### **2.3.16 Site Regrading and Restoration**

Backfilling was to be initiated following confirmation that the remaining soil at an excavation met the LRG, URG, and TCLP criteria. Based on the proposed excavation quantities, it was anticipated that a sufficient quantity of material existed at each of the sites for use as backfill and grading material. Use of concrete excavated during RA activities, which was verified to be clean by visual inspection and/or characterization sampling, was also approved for use as backfill in excavations.

Where feasible, site excavations were to be regraded to provide natural drainage and to prevent ponding. Following placement of backfill materials, the soil was to be compacted and graded to drain consistent with the adjacent terrain. Identification of potential borrow sources were to be conducted in consultation with the USDA/FS per the June 2004 ROD. Reseeding was to be conducted in consultation with the USDA/FS per the June 2004 ROD, in areas deemed critical to prevent significant storm water erosion. Vegetation established in the regraded areas was to be consistent with the surrounding topography, and erosion control blankets were to be utilized as necessary. Silt fencing was to be established in critical areas to avoid sediment runoff to surrounding areas.

[END OF SECTION]



### **3.0 REMEDIAL ACTION CONSTRUCTION ACTIVITIES**

This section provides a summary of RA construction activities associated with the excavation and disposal of contaminated soils, concrete, liquid, and miscellaneous debris at Sites L2, L5, L23A, M3, M4, and M12.

MWH was the prime contractor for RA activities. J.R. Castle Construction, Inc. provided services for site preparation, excavation, transportation, backfilling, and site restoration. USA Environmental, Inc. (USAE) provided services for MEC clearance. The LUSE Companies (LUSE) provided services for transite removal. MWH and USACE provided construction management, health and safety oversight, quality control (QC), and documentation services.

#### **3.1 MOBILIZATION**

Preparatory phase meetings were held on July 31, 2006, and August 21, 2006, at the JOAAP site office. Members of USACE and MWH conducted both meetings. Attendees included representatives from USACE, MWH, and USAE.

The purpose of the preparatory phase meetings included a review of applicable specifications; a review of the contract plans; a check to verify that materials and/or equipment have been tested, submitted, and approved; review of provisions that were made to provide required QC inspections and testing; examination of the work area to verify that required preliminary work would be completed in compliance with the contract; a physical examination of the required materials, equipment, and sample work to verify that they were on hand and conform to approved drawings or submitted data, and were properly stored; a review of the appropriate activity hazard analysis (AHA) to verify safety requirements were met, and discussions of procedures for controlling quality of the work including elimination of repetitive deficiencies.

Mobilization of project equipment and personnel to begin RA activities at the sites was conducted on June 5, 2006. A chronology of important project milestone events at each RA site is provided in Section 4.0.

#### **3.2 SITE PREPARATION**

MWH commenced RA activities for Sites L2, L5, L23A, M3, M4, and M12 in June 2006. As part of the storm water management controls, silt fencing, flow diversion berms, and rock check dams were installed according to the Phase 2 - RD/RA Workplan as depicted in Figures 1-3 through 1-8b with the following deviations:



- Site L2 – No silt fences were installed at the east-west burning pads or popping furnace area
- Site L5 – No silt fences were installed at the ditch, Building 26-2, or the former Junk Pile Area
- Site L23A – No silt fence was installed.
- Site M4 – The temporary diversion flow berm was not installed.
- Site M12 – The rock check dam was not installed south of the lagoon.

Field staking was installed throughout construction at Sites L2, L5, L23A, M3, M4, and M12 to delineate the excavation areas based on the design drawings, visual observations, test kit analysis, and laboratory analysis. Exclusion zones were set up around areas to be excavated with field staking defining both the exclusion zone along the perimeter of the excavation and the contaminant reduction zone (CRZ) six feet outside of the exclusion zone.

### **3.2.1 Soil Characterization**

While RI/FS activities identified the probable presence of contamination at Sites L2, L5, L23A, M3, M4, and M12, preliminary characterization samples were collected to more accurately define the boundaries of contaminated soils. Characterization sampling was conducted prior to initiating excavation activities during remedial activities.

The areas of excavation at Sites L2, L5, L23A, M3, M4, and M12 were delineated horizontally with indication of the approximate depth of excavation and type of contamination in the Phase 2 - RD/RA Workplan. The extent of the required excavations varied considerably from the design drawings based on visual observation, test kit results, and XRF unit results. Actual RA excavation and sampling locations and corresponding depths at these sites are discussed in Section 3.4.

### **3.2.2 Borrow Source Material**

On-site material was to be used for backfill following excavation. On-site material was to be obtained from a clean location and did not require additional characterization. If an off-site borrow source became necessary for backfill and grading material, three soil samples per soil type (topsoil and general fill) plus one sample per 5,000 CY per soil type were to be collected and analyzed for each borrow source. Borrow soils were to be analyzed for explosives, VOCs, SVOCs, pesticides/PCBs, and metals. Analytical results were to be compared to LRG criteria. No soils with analytes above LRG criteria were to be used as borrow source material.

Backfill materials were obtained from a clean location within the same site as the excavation Sites L2, L5, L23A, M3, M4, and M12. On-site borrow source materials also included soils from the topography surrounding excavations. Perimeter samples from excavations, which passed LRG, URG, and TCLP criteria, indicated that adjacent materials were suitable as a borrow source. Additional borrow source locations included earthen berms at Site L7 and



treated SRU1 soils. The USDA/FS were aware of the borrow sources used. Site restoration activities including backfill are discussed in Section 3.11.

### **3.2.3 Debris Characterization and Disposal**

Concrete and debris excavated during the RA activities at Sites L2, L5, L23A, M3, M4, and M12 were disposed of at the Prairie View RDF. Prior to disposal, all protruding rebar and other metal debris was cut and transported to a scrap yard for recycling. Wood debris encountered during the RA activities was properly disposed at the Prairie View RDF. Debris located at the Site M3 burning areas is shown in Appendix A, Photograph 1. Scrap metal encountered in the Site M3 excavation was power washed prior to transport, as shown in Appendix A, Photograph 2. Waste profile documentation for concrete debris is presented in Appendix B.

## **3.3 WATER HANDLING - LIQUID CHARACTERIZATION**

No settling boxes or sumps were encountered during excavation activities at Sites L2, L5, L23A, M3, M4, and M12. Standing liquid was observed in a popping furnace and aboveground storage tank (AST) at Site L2, the vat at Site M3 (Appendix A, Photograph 3), and the excavation at Site M4.

At Site L2, the standing liquid in the popping furnace was analyzed for metals and explosives; the standing liquid in the AST was analyzed for TPH-diesel range organics (DRO) and TPH-gasoline range organics (GRO).

At Site M3, the standing liquid and sludge in the vat were characterized for VOCs, SVOCs, PCBs, explosives, TPH-DRO, TPH-GRO, metals, reactive cyanide, reactive sulfide, ignitability, and pH (Table 3-1). Characterization results indicated that the standing liquid and sludge were not hazardous. The standing liquid and sludge were mixed with stockpiled soils following a controlled discharge from the vat. The resulting mixture was direct loaded onto hauling vehicles and disposed at the Prairie View RDF. Additional samples were collected and analyzed for TPHs from the stockpile footprint following excavation/loading.

At Site M4, standing water from the excavation was analyzed for explosives (due to the proximity of the BTF) and lead. Standing water was encountered in the excavation at Site M4 and was analyzed for total suspended solids (TSS), explosives, and metals.

## **3.4 SOIL EXCAVATION**

Excavation activities commenced at Sites L2, L5, L23A, M3, M4, and M12 on July 6, 2006. Site M3 was the first in the sequence of construction. Soil excavation activities at Sites L2, L5, L23A, M3, M4, and M12 are considered complete. All RA activities as delineated in the



Phase 2 – RD/RA Workplan, are considered complete and are presented in this Closure Report.

Excavation activities were conducted using conventional excavation equipment as depicted in Appendix A, Photograph 4. Excavation activities were performed by J.R. Castle Construction, Inc. under subcontract to and managed by MWH.

The Phase 2 - RD/RA Workplan identified the approximate lateral and vertical extent of the excavations to be completed at each site. Excavated materials were stockpiled near the work areas and then loaded onto transport vehicles at the completion of remedial activities. Appendix A, Photographs 5 and 6 depict stockpiling and loading of excavated soils to be transported to the Prairie View RDF. Excavators scraped the truck loading areas when fugitive soil fell outside the truck beds. This material was deposited in the truck directly or returned to locations identified for additional excavation. Following loading activities for the stockpiled material, characterization activities were conducted at the stockpile footprint to verify that impacted soils were not left in place. Impacted soils above LRG, URG, or TCLP criteria were excavated and properly disposed.

Excavation, sampling, and analysis activities were conducted in accordance with the protocols established in the Phase 2 - RD/RA Workplan and Phase 2 - SAP, respectively. Excavations were extended both laterally and vertically until visible areas of staining were removed and Ensysis<sup>®</sup> test kit, XRF unit, and laboratory analytical results indicated concentrations of COCs below their respective LRG, URG, and TCLP criteria. All samples requiring PCB analysis were submitted to an off-site laboratory and were not analyzed by the Clor-n-soil<sup>®</sup> PCB Screening Kit. Excavation activities were conducted in a manner to segregate SRU1, SRU2, SRU3, SRU4, and SRU5 soils identified in the Phase 2 - RD/RA Workplan drawings. Due to the limited amount of SRU7 soils at Site M12, SRU2 and SRU7 soils were combined prior to disposal. In addition, care was taken to segregate loads of demolition debris from those predominantly containing soil.

Visual field observation, Ensysis<sup>®</sup> test kits, and XRF units were used to approximate the lateral and vertical extent of contamination. Ensysis<sup>®</sup> test kits use a colorimetric method to determine approximate TNT concentrations in the field. The XRF unit irradiates a sample with high-energy photons (e.g., x-rays or gamma rays) and determines the resulting x-ray fluorescence emitted by the sample. The XRF unit measures the characteristics of the resultant fluorescence spectrums, and is able to generate a corresponding concentration for each metal detected.

Confirmation sampling and subsequent laboratory analysis was used to verify that the remaining soils in excavated areas did not exceed LRGs, URGs, and TCLP criteria. Confirmation sampling for the excavated areas was conducted in accordance with the Phase 2 - SAP. The Phase 2 - SAP states that excavations greater than 5 feet deep were required to have a sample collected from the first foot of soil and from 2 to 3 feet above base of the excavation sidewalls. During RA activities, there were instances of staining or



discoloration on sidewalls, which sampling technicians targeted as “suspect” or worst-case scenario areas.

A visual inspection was completed at remediated areas in the days immediately following the excavation and confirmation sampling activities. This delay allowed any soil contaminated with fugitive TNT or DNT to stain the soil, reacting with oxygen in the air and sunlight. Typically, TNT-stained soils demonstrate an apparent reddish or rusty brown color if present in soil. Dinitrotoluene-stained soil varied in characteristics by demonstrating a black, green, or yellowish tint depending upon soil type. If soil became stained due to the presence of fugitive TNT or DNT, excavation activities were conducted to remove soils in those locations with no additional confirmation samples being sent to the laboratory due to passing samples already collected at that location.

When visual inspection indicated that no stained soils were present, and confirmation sampling indicated that the LRGs, URGs, and TCLP criteria had been achieved, excavation activities were considered complete. When confirmation sampling indicated that LRGs, URGs, or TCLP criteria had not been met, additional excavation and additional confirmation sampling was conducted. Averaging was not conducted for contaminants that were above LRGs but below URGs and TCLP criteria at any site. The total quantity of soils excavated at Sites L2, L5, L23A, M3, M4, and M12 is summarized in the following table:

| Site         | Total Soil Volume (CY) | SRU1 Soil Volume (CY) | SRU2 Soil Volume (CY) | SRU3 Soil Volume (CY) | SRU4 Soil Volume (CY) | SRU5 Soil Volume (CY) | SRU7 Soil Volume (CY) | Concrete (CY) |
|--------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|---------------|
| Site L2      | 8,038                  | 946                   | 7,092                 | ---                   | ---                   | ---                   | ---                   | 280           |
| Site L5      | 29,330                 | ---                   | 1,383                 | ---                   | 27,603                | 344                   | ---                   | 0             |
| Site L23A    | 5,492                  | ---                   | 5,492                 | ---                   | ---                   | ---                   | ---                   | 0             |
| Site M3      | 23,667                 | 55                    | 23,612                | a                     | ---                   | ---                   | ---                   | 0             |
| Site M4      | 8,150                  | ---                   | 8,150                 | ---                   | ---                   | ---                   | ---                   | 0             |
| Site M12     | 8,469                  | ---                   | 8,469                 | ---                   | ---                   | ---                   | 12 <sup>b</sup>       | 0             |
| <b>TOTAL</b> | <b>83,146</b>          | <b>1,001</b>          | <b>54,198</b>         | <b>---</b>            | <b>27,603</b>         | <b>344</b>            | <b>12</b>             | <b>280</b>    |

Notes:

--- Not applicable

a SRU2 and SRU3 soils at M3 were combined

b SRU2 and SRU7 soils at M12 were combined prior to disposal. Approximately 12 CY were SRU7 soils.

With some exceptions, the remedial activities at Sites L2, L5, L23A, M3, M4, and M12 were conducted as described in the Phase 2 - RD/RA Workplan. Additional activities conducted at the sites included removal of transite paneling and a vat. Additional activities are discussed in Section 3.4.1.

Detailed discussions describing RA excavation and sampling activities and deviations at Sites L2, L5, L23A, M3, M4, and M12 are presented in the following subsections. Each



subsection contains a description of the excavation activities and confirmation sampling activities conducted at these sites to verify that those areas no longer have contamination above LRG, URG, and TCLP criteria.

### **3.4.1 Additional Remedial Action Activities**

#### **3.4.1.1 Transite Panel Removal**

During excavation activities at Site L23A, field personnel encountered transite panels. To minimize hazards to field personnel, LUSE was contracted to remove transite panels from selected areas. LUSE excavated the pieces of transite paneling, placed the transite in a roll-off bin, and sent it to the Prairie View RDF along with the soils to be disposed as special waste. Locations where transite panel removal was conducted are presented in the following table. LUSE also removed the transite roof panels from the popping furnaces at Site L2.

| Site      | Building             | Removal Action               |
|-----------|----------------------|------------------------------|
| Site L2   | Popping Furnaces     | Removed transite roof panels |
| Site L23A | No Structure Present | Removal of buried transite   |

#### **3.4.1.2 Vat Removal**

A vat containing an unknown liquid and sludge was encountered in the southwest corner of the fenced area at Site M3, as shown in Appendix A, Photographs 7 and 8. The unknown liquid and sludge were profiled and were determined to be non-hazardous. Results are included on Table 3-1. The standing liquid and sludge were discharged and mixed with stockpiled soils. The resulting mixture was transported and disposed at the Prairie View RDF. Additional samples were collected for TPH from the stockpile footprint following excavation. The vat was power-washed, cut up, and disposed at the Prairie View RDF.

#### **3.4.1.3 AST Removal**

A 2,000-gallon AST containing diesel was encountered in the former popping furnace area at Site L2 (Appendix A, Photograph 9). The liquid was analyzed for TPH-DRO and TPH-GRO. Results are included on Table 3-1. Approximately 100 gallons of liquid were mixed with the excavated soils and were transported and disposed of at the Prairie View RDF.

#### **3.4.1.4 Popping Furnaces Removal**

Four popping furnaces were encountered in the former popping furnace area at Site L2. Unknown liquid was present in one of the popping furnaces and was analyzed for explosives and metals. Results are included on Table 3-1. The concentrations detected in the liquid were below ISQWS and were discharged to the surrounding topography. The popping furnaces were cut up and disposed at the Prairie View RDF (Appendix A, Photograph 10).

### **3.4.2 Site L2**

Remedial action activities at Site L2 were initiated on February 12, 2007, and October 31, 2007. Approximately 946 CY of unscreened SRU1 soils were transported from Site L2 to the Site M4 BTF for stockpiling, screening, and treatment. Approximately



7,092 CY of unscreened SRU2 soils were transported from Site L2 to the Prairie View RDF for disposal. The following table summarizes the soil excavation activities conducted at locations within Site L2.

| Building/Area Description   | SRU           | Perimeter Pass RGs? | Floor Pass RGs? | Reference Figure | Reference Table | Comments                                     |
|-----------------------------|---------------|---------------------|-----------------|------------------|-----------------|--|
| North-South Burning Pads    | SRU1/<br>SRU2 | N/A                 | N/A             | Figure 3-1       | Table 3-2       | Characterization passed LRG and URG criteria |
| East-West Burning Pads      | SRU1/<br>SRU2 | Y                   | Y               | Figure 3-2       | Table 3-3       |  |
| Former Popping Furnace Area | SRU2          | Y                   | Y               | Figure 3-3       | Table 3-4       |  |

Notes:

N/A Not Applicable  
Y Yes

Deviations from the Phase 2 - RD/RA Workplan at Site L2 included:

- Characterization samples were biased toward identification and characterization of source areas and deviated from the grid approach described in the Phase 2 - RD/RA Workplan. Due to poor soil integrity in sources areas during characterization events, test pits and trenches were required to collect samples at the 8-foot depths specified in the Phase 2 – RD/RA Workplan.
- The lateral and vertical extent of excavations were smaller than anticipated at the east-west due to soil characterization sampling results below LRG, URG, and TCLP criteria.
- The lateral and vertical extent of excavations were larger than anticipated at the former popping furnace area due to metals-contaminated soils.
- Mechanical screening was not conducted at Site L2 because the frequency of anomalies was insufficient to justify mobilization and utilization of a screening plant. Analog detection and intrusive investigations were successfully conducted to clear MEC to 1 foot bgs at the site.



- Characterization perimeter sample JPL2-CP48(1) was used as final confirmation sample but had an Enslys<sup>®</sup> test kit result for TNT above 100 ppm (125.1 ppm). While this should have been analyzed by the fixed laboratory, 125.1 ppm is lower than the LRG of 200 mg/kg and it is unlikely that CP48(1) exceeded the LRG. Upon review of other samples where Enslys<sup>®</sup> test kit results were greater than 100 ppm and samples were submitted to TestAmerica Analytical Testing Corporation (TestAmerica) (formerly Severn Trent Laboratories, Inc. [STL]) for analysis, results were consistently less than 100 ppm. Therefore, the impact to data quality is negligible.
- The entire northwest corner of the east-west burning pads was to be excavated to 8 feet bgs based solely on one sample collected during the RI. As excavation began, the extremely unstable condition of the soil represented a hazard to personnel and equipment. The location of that RI sample was identified and was excavated to groundwater approximately 6 to 7 feet bgs. The wet, sandy soil at this interval was caving in; therefore, samples were collected at 2 and 4 feet bgs directly above the RI sample location and at two other locations on the eastern side of the northwest corner. Two additional test pits were dug to 8 feet bgs on the eastern perimeter to establish outer limits of any contamination. No contamination was identified and the decision was made to not continue excavation due to the safety issues and as a total of 37 samples had been taken in the area with no exceedences. In addition, the high permeability of the soil, along with the high rate of water flow makes the presence of contamination very unlikely.
- Approximately 1,754 CY of SRU1 soils were to be excavated from the central portion of the east-west burning pads. The area was evaluated by characterization sampling instead of excavating to 1 foot bgs. Excavation of explosives-contaminated soils and subsequent confirmation sampling were conducted in the area where characterization sampling indicated concentrations greater than LRG/URG criteria.
- Approximately 111 CY of SRU1 soils were to be excavated from the east-central portion of the east-west burning pads. The area was evaluated by characterization sampling instead of excavating to 1 foot bgs. Explosives were not detected above LRG and URG criteria.
- Samples PF5, PF6, TF3, TF4, TP4, TP5, and TP6 had odor and staining. These samples were taken in a small trench excavated to remove a fuel line between the popping furnaces and the fuel tank used to fire them. Samples were analyzed for TPH-DRO and TPH-GRO but no elevated levels were present.

### **3.4.3 Site L5**

Remedial action activities at Site L5 were conducted between June 6, 2007, and September 18, 2007. Approximately 344 CY of unscreened SRU5 soils were transported from Site L5 to the Site M4 BTF for stockpiling, screening, and treatment. Approximately 1,383 CY of unscreened SRU2 soils and 27,603 CY of unscreened SRU4 soils were



transported from Site L5 to the Prairie View RDF for disposal. The following table summarizes the soil excavation activities conducted at locations within Site L5.

| Building/Area Description | SRU                    | Perimeter Pass RGs? | Floor Pass RGs? | Reference Figure | Reference Table | Comments   |
|---------------------------|------------------------|---------------------|-----------------|------------------|-----------------|--|
| Building 26-2             | SRU2                   | Y                   | Y               | Figure 3-4       | Table 3-5       |  |
| Buildings 26-3 and 26-4   | SRU5                   | Y                   | Y               | Figure 3-5       | Table 3-6       |  |
| Ditch                     | SRU2/<br>SRU5          | Y                   | Y               | Figure 3-6       | Table 3-7       |  |
| Junk Pile Area            | SRU2/<br>SRU4          | Y                   | Y               | Figure 3-7       | Table 3-8       | <b>PCB Excavation</b><br>- PCB composite samples passed RGs  |
| Junk Pile Area            | SRU2/<br>SRU4/<br>SRU5 | Y                   | Y               | Figure 3-8a      | Table 3-9       | <b>PCN Excavation Grid</b> - Metals (antimony, arsenic, cadmium, chromium, copper, thallium, and zinc) and PAHs were not analyzed as required. |
| Junk Pile Area            | SRU2/<br>SRU4/<br>SRU5 | Y                   | Y               | Figure 3-8b      | Table 3-9       | <b>PCN Excavation</b> - Metals (antimony, arsenic, cadmium, chromium, copper, thallium, and zinc) and PAHs were not analyzed as required.      |

Notes:

N/A Not Applicable  
Y Yes

Deviations from the Phase 2 - RD/RA Workplan at Site L5 included:



- The lateral and vertical extent of excavations at Site L5 were greater than anticipated due to PCB- and PCN-contaminated soils.
- During PCB characterization, it was determined that PCNs were present at the site. During the March 2007 PM Meeting held on March 7, 2007, the IEPA and USEPA agreed with the use of the PCB sampling methods, LRG, URG, and TCLP criteria for PCNs.
- Munitions debris (MD) was encountered in a small localized area at the eastern end of the Ditch at Site L5. USA Environmental, Inc. recovered, treated, and/or disposed of MD as it was encountered. Soil at this end of the Ditch was excavated and sifted by USA personnel in all directions until no further MD was encountered. The MD items were drummed and transported to Belson Steel Center Scrap, Inc. for disposal. Sixteen drums were transported, totaling approximately 9,600 pounds of MD. Munitions debris is essentially scrap metal with no explosive potential, consistent with Site L5's function as a salvage yard. Horizontal and vertical extents of the MD were determined and no further investigation is warranted.
- No area perimeter samples were collected on the sidewalls adjacent to Buildings 26-3 and 26-4 because the excavation did not extend below the buildings' foundations.
- Approximately 39 CY of SRU2 and SRU4 soils were to be excavated from the north-central portion of the former Junk Pile Area to 1 foot bgs. The area was instead excavated to 5 feet bgs during the PCN excavation. Although confirmation samples were collected for metals, their locations did not overlap with the remedial design plan because they were located too far west. Additional sampling for metals will be conducted in the spring of 2008. Closure documentation for this area will be submitted under a separate cover.
- The excavation in the vicinity of the former Junk Pile Area was not characterized using an XRF unit and Clor-n-Soil<sup>®</sup> PCB Screening Kit; instead, samples were sent directly to an off-site laboratory for lead and PCB analyses.
- PCNs were initially characterized using 11, 100-foot grids named A through K. Five composite samples spaced 10 feet apart were collected from each grid at 1 foot bgs (Figure 3-8a). Due to high PCN concentrations in grids A, B, C, E, and F, soil was excavated to 5 feet bgs (Appendix A, Photograph 11). Composite samples PCN2-1 through PCN2-27 were collected at a 5-foot spacing (Figure 3-8b).
- The method detection limit (MDL) was greater than the LRG and URG criteria for PCBs for composite samples JPL5-C2(1) and JPL5-C3(1). These samples were diluted due to matrix interference with PCNs. Additional excavation was conducted at these sample locations due to PCN contamination; therefore, the likelihood that PCBs are present at concentrations greater than LRG and URG criteria is improbable.



- Polychlorinated naphthalene (PCN) was identified as a contaminant of concern (COC) in soil at Site L5 as a result of pre-removal action sampling to estimate the extent polychlorinated biphenyl (PCB) compound contamination identified at Site L5 during the Remedial Investigation. Polychlorinated naphthalene had not been previously identified as a potential COC at JOAAP, thus no soil sampling protocol to confirm achievement of Remediation Goals (RGs) had been established in the 2004 Record of Decision (ROD) for the Soil Operable Unit (SOU) for this COC. A work plan was written that included PCN soil sampling at Site L5 and was approved by site stakeholders (US Army, Illinois Environmental Protection Agency, US Environmental Protection Agency, USDA, and US Army Corps of Engineers), which indicated soil sampling for PCN would follow the same sampling protocols and RGs stipulated for PCBs in the 2004 ROD.

A total of 8 discrete samples were collected on rectangular grids that progressively stepped out from the source. The eight discrete samples were composited, resulting in one sample for chemical analysis. Soil confirmation sampling using the PCB sampling protocol for PCN was conducted on August 8, 2007. As required by the approved work plan, target analyte list (TAL) metal and PCB analyses were performed for soil confirmation samples. A total of ten composite samples were collected for PCB, PCN and TAL metals. Analytical results from August 2007 soil sampling indicated no detection of PCN or PCB.

One TAL metal was detected in all ten soil samples that exceeded the Lower Remediation Goal (LRG) for thallium (0.68 milligrams per kilogram [mg/kg]). Reported thallium concentrations ranged from 1.4 to 3.1 mg/kg. Target analyte list metals were analyzed by Method SW846-6010B. Reporting limits (RLs) by Method SW846-6010B exceeded the LRG and ranged from 1.1 to 1.4 mg/kg.

After the August 2007 confirmation sample results were reviewed, a second work plan (Final Site L5 Soil Sampling Work Plan) for soil sampling for thallium at Site L5 was written and approved by site stakeholders. The sampling protocol in the *Final Site L5 Soil Sampling Work Plan* (MWH, 2008) consisted of collection of discrete floor and perimeter soil samples for thallium. The analytical method specified for thallium was Method SW846-7841, which achieves lower RLs and exhibits less matrix interference from other heavy metals present in site soils (i.e., manganese) at Site L5. A total of twenty-one discrete soil samples for thallium were collected on October 1, 2008 at the PCN excavation located at Site L5. The twenty-one discrete soil samples consisted of twelve perimeter samples collected at 0.5 ft depth and nine excavation floor samples collected at 6.0 ft depth. Sample AF5 was collected at the center of the rectangular grids established during the August 2007 confirmation sampling event and samples AF1 through AF4 and AF6 through AF9 were collected laterally, outside the former PCN sampling footprint. Perimeter samples were collected outside the limits of floor samples.



A review of thallium analytical results from the October 2008 sampling event indicated no exceedances of the LRG for thallium (0.68 mg/kg). Seventeen of the discrete soil samples had no reported detection of thallium and the RLs ranged from 0.19 to 0.25 mg/kg, below the LRG of 0.68 mg/kg. Thallium was reported at a range of 0.37 to 0.56 mg/kg in three perimeter samples (AP1, AP2, and AP11) and thallium was reported at 0.37 mg/kg in floor sample AF1. The October 2008 soil sampling event confirms that the extent of thallium LRG exceedances in soil at the PCN excavation at Site L5 at JOAAP achieve the RGs and no further action is required.

#### **3.4.4 Site L23A**

Remedial action activities at Site L23A were conducted between April 5, 2007, and May 18, 2007. Approximately 5,492 CY of unscreened SRU2 soils were transported from Site L23A to the Prairie View RDF for disposal. Confirmation soil sample results for Site L23A are provided in Table 3-10. Figure 3-9 depicts the remedial activities conducted at Site L23A.

Deviations from the Phase 2 - RD/RA Workplan at Site L23A included:

- Approximately 270 CY of buried transite paneling and surrounding soils were removed by LUSE from the southeastern portion of the excavation between approximately 1 to 6 feet bgs.
- Samples JPL23A-AF10(6) and JPL23A-AP16(4) were inadvertently not analyzed for arsenic, copper, and nickel. All other confirmation samples collected from this excavation met the LRG criteria for arsenic, copper, and nickel; therefore, it is unlikely that these contaminants are present at concentrations greater than the LRG.

#### **3.4.5 Site M3**

Remedial action activities at Site M3 were conducted between July 6, 2006, and September 25, 2007. Approximately 55 CY of unscreened SRU1 soils were transported from Site M3 to the Site M4 BTF for stockpiling, screening, and treatment. Bedrock was encountered at 2 to 3 ft bgs during excavation activities. Approximately 23,612 CY unscreened SRU2 and SRU3 soils were transported from Site M3 to the Prairie View RDF for disposal. The following table summarizes the soil excavation activities conducted at locations within Site M3.



| Building/Area Description             | SRU  | Perimeter Pass RGs? | Floor Pass RGs? | Reference Figure | Reference Table | Comments |
|---------------------------------------|------|---------------------|-----------------|------------------|-----------------|----------|
| Flashing Grounds – Northwest Quadrant | SRU2 | Y                   | Y               | Figure 3-10a     | Table 3-11      |          |
| Flashing Grounds – Northeast Quadrant | SRU3 | Y                   | Y               | Figure 3-10b     | Table 3-11      |          |
| Flashing Grounds – Southeast Quadrant | SRU2 | Y                   | Y               | Figure 3-10c     | Table 3-11      |          |
| Flashing Grounds – Southwest Quadrant | SRU2 | Y                   | Y               | Figure 3-10d     | Table 3-11      |          |
| Former Burning Areas                  | SRU1 | Y                   | Y               | Figure 3-11      | Table 3-12      |          |

Notes:

Y Yes

Deviations from the Phase 2 - RD/RA Workplan at Site M3 included:

- Characterization samples were biased toward identification and characterization of source areas and deviated from the grid approach described in the Phase 2 - RD/RA Workplan.
- The top one foot of soil within the former burning area fenceline was removed prior to excavation and confirmation sampling to remove debris.
- Figure 5-3a of the Phase 2 - RD/RA Workplan incorrectly identifies cadmium as a COC instead of chromium in the northwestern quadrant of the flashing grounds. Confirmation samples were analyzed for chromium instead of cadmium. All samples were below LRG criteria.
- Although thallium was not detected at the flashing grounds, the MDL for thallium was greater than the LRG (0.68 mg/kg) for several samples. The highest method detection limit for thallium was 0.73 mg/kg.

### 3.4.6 Site M4

Remedial action activities at Site M4 were conducted between December 6, 2006, and September 24, 2007. Approximately 8,150 CY of unscreened SRU2 soils were transported from Site M4 to the Prairie View RDF for disposal. The following table summarizes the soil excavation activities conducted at locations within Site M3.



| Building/Area Description | SRU  | Perimeter Pass RGs? | Floor Pass RGs? | Reference Figure | Reference Table | Comments |
|---------------------------|------|---------------------|-----------------|------------------|-----------------|----------|
| Lead Azide Lagoon         | SRU2 | Y                   | Y               | Figure 3-12      | Table 3-13      |          |
| Northwestern Ditch        | SRU2 | Y                   | Y               | Figure 3-12      | Table 3-13      |          |
| Area west of Fence        | SRU2 | Y                   | Y               | Figure 3-12      | Table 3-13      |          |

Notes:

N/A Not Applicable  
Y Yes

Characterization and confirmation soil sample results for Site M4 are provided in Table 3-13. Figure 3-12 depicts the remedial activities conducted at Site M4.

Deviations from the Phase 2 - RD/RA Workplan at Site M4 included:

- Characterization samples were biased toward identification and characterization of source areas and deviated from the grid approach described in the Phase 2 - RD/RA Workplan.
- Characterization samples were collected at 1-, 2-, and 3-foot depths at sample locations CP4, CP5, and CP6 north of the Lead Azide Lagoon to evaluate lead concentrations in this area.
- The Lead Azide Lagoon was excavated to bedrock, which ranged in depth from 2 to 4 feet bgs.
- The drainage ditch in the northwest portion of Site M4 was excavated to bedrock, which ranged in depth from 1 to 3 feet bgs.
- Lead concentrations in the drainage ditch in the northwest portion of Site M4 were determined by off-site laboratory analysis instead of an XRF unit.

### 3.4.7 Site M12

Remedial action activities at Site M12 were conducted between November 14, 2006, and September 26, 2007. Approximately 8,469 CY of unscreened SRU2 and SRU7 soils were transported from Site M12 to the Prairie View RDF for disposal. The SRU7 soils were handpicked and scraped with excavating equipment during a visual sweep of the areas identified in the Phase 2- RD/RA Workplan and overseen by MWH QC personnel. Due to their small volume (approximately 12 CY), SRU7 soils were mixed with the SRU2 soils prior to disposal at Prairieview RDF. The SRU7 soils were located near the northern concrete



pad and the ditch to the west within the area indicated in Figure 3-13. The following table summarizes the soil excavation activities conducted at Site M12.

| Building/Area Description  | SRU  | Perimeter Pass RGs? | Floor Pass RGs? | Reference Figure | Reference Table | Comments |
|----------------------------|------|---------------------|-----------------|------------------|-----------------|----------|
| Wastewater Lagoon          | SRU2 | Y                   | Y               | Figure 3-13      | Table 3-14      |          |
| Drainage Ditch and Outfall | SRU2 | Y                   | Y               | Figure 3-14      | Table 3-14      |          |

Notes:

Y      Yes

Deviations from the Phase 2 - RD/RA Workplan at Site M12 included:

- Characterization samples were biased toward identification and characterization of source area and deviated from the grid approach described in the Phase 2 - RD/RA Workplan.
- An area perimeter sample was not collected on the sidewall south of area perimeter samples AP49(1) and AP54(1). Based on passing confirmation samples AP49(1), AP54(1), and CP15(1), removal of soils above LRG and URG criteria is probable.
- An area perimeter sample was not collected on the sidewall north of area perimeter samples AP51(1) and AP52(1). Based on passing confirmation samples AP51(1), AP52(1), and CP12(1), removal of soils above LRG and URG criteria is probable.

### 3.5 SOIL TRANSPORT ACTIVITIES

Tri-axle haul trucks were used for transporting contaminated soils stockpiled at the work sites to the Prairie View RDF or the Site M4 BTF. Excavated soils were loaded into the haul trucks outside the excavation zone. The tires did not encounter contaminated soils; therefore, decontamination of the tires was unnecessary.

Excavated SRU1 and SRU5 soils were routed to the untreated centralized receiving/stockpile area at the Site M4 BTF. Prior to inclusion in the bioremediation treatment process, soils from the untreated soil stockpile (and Building #4 for the SRU5 soils) area were screened, loaded into haul trucks, and transported to the BTF scale for weighing. The stockpiled soils at Site M4 BTF are currently being processed for bioremediation as described in Section 7 – Bioremediation Facility Design of the Phase 1 - RD/RA Workplan (Montgomery Watson, April 1999).



After dumping each load, the trucks proceeded to the decontamination pad to decontaminate the tires. A laborer was present with a pressure washer to wash all the truck tires as they exited the Site M4 BTF through the decontamination pad. Following decontamination, the haul trucks returned to the excavation areas for additional soils.

Site mobility and decontamination at each of the sites is described in the following subsections.

### **3.5.1 Site L2**

Transport of excavated SRU1 soils from Site L2 began from the site access road onto Central Road. Trucks traveled east on Central Road to Chicago Road. Trucks proceeded from Chicago Road north to Hoff Road. From Hoff Road trucks proceeded west to Route 53. Trucks then proceeded north on Route 53 to Strawn Road. Trucks then proceeded west on Strawn Road to Baseline Road. Trucks proceeded south and west on Baseline road to Snake Road. From Snake Road, trucks then proceeded north to Tetryl Road. Trucks then proceeded southwest on Tetryl Road to West TNT Road. Trucks then proceeded north on West TNT Road to the Site M4 BTF.

Transport of excavated SRU2 soils from Site L2 began from the site access road, which is at the southern perimeter of the site onto Central Road. Trucks then proceeded west on Central Road to Road 2 West. Trucks proceeded south on Road 2 West to Prairieview Lane to the Prairie View RDF.

### **3.5.2 Site L5**

Transport of excavated soils from Site L5 began from the site access road at the northern perimeter of the site to Hoff Road. Trucks then proceeded west on Hoff Road to Route 53. Trucks then proceeded south on Route 53. Trucks then proceeded east on Arsenal Road to Prairieview Lane to the Prairie View RDF.

### **3.5.3 Site L23A**

Transport of excavated soil from Site L23A began from the site access road, which is at the northern perimeter of the site and onto the unnamed road at north of the Site. Trucks proceeded west on the unnamed road to Chicago Road. Trucks then proceeded north on Chicago Road to Road 2 North. Trucks proceeded west on Road 2 North to Route 53. Trucks then proceeded south on Route 53. Trucks then proceeded east on Arsenal Road to Prairieview Lane to the Prairie View RDF.

### **3.5.4 Site M3**

Transport of excavated soil from the flashing grounds at Site M3 began from the site access road. From the access road, trucks traveled east on Blodgett Road to Tetryl Road. Trucks proceeded northeast on Tetryl Road to Snake Road. Trucks then proceeded south and east to Baseline Road. Trucks proceeded north on Baseline Road to Strawn Road. Trucks then proceeded east on Strawn Road to Route 53. Trucks traveled south on Route 53. Trucks then proceeded east on Arsenal Road to Prairieview Lane to the Prairie View RDF.



Transport of excavated soil from the burning areas at Site M3 began from a site access road. From the access road, trucks traveled north on West Patrol Road to Blodgett Road. Trucks then proceeded to the Prairie View RDF, as described above.

#### **3.5.5 Site M4**

Transport of excavated soil from Site M4 began from the site access road at the existing decontamination pad near the site exit. From the site exit, trucks proceeded south on West TNT Road to Tetryl Road. Trucks proceeded northeast on Tetryl Road to Snake Road. Trucks then proceeded south and east to Baseline Road. Trucks proceeded north on Baseline Road to Strawn Road. Trucks then proceeded east on Strawn Road to Route 53. Trucks traveled south on Route 53. Trucks then proceeded east on Arsenal Road to Prairieview Lane to the Prairie View RDF.

#### **3.5.6 Site M12**

Transport of excavated soil from the north side of Site M12 began from the site access road at the east perimeter of the site. From the site access road, trucks proceeded south on West TNT Road to Tetryl Road. Trucks proceeded northeast on Tetryl Road to Snake Road. Trucks then proceeded south and east to Baseline Road. Trucks proceeded north on Baseline Road to Strawn Road. Trucks then proceeded east on Strawn Road to Route 53. Trucks proceeded south on Route 53. Trucks then proceeded east on Arsenal Road to Prairieview Lane to the Prairie View RDF.

Transport of excavated soil from the southern side of Site M12 began from West Patrol Road. Trucks proceeded south on West Patrol Road to Blodgett Road. Trucks proceeded east on Blodgett Road to Tetryl Road. Trucks then proceeded to the Prairie View RDF, as described above.

### **3.6 SAMPLING AND ANALYSIS**

Section 2.4 of the Phase 2 - SAP describes the sampling protocols that were used to confirm that the remaining soils within Sites L2, L5, L23A, M3, M4, and M12 did not exceed LRG, URG, and TCLP criteria. The purpose of this sampling approach was to collect data to confirm that the lateral and vertical extents of the soil excavations were sufficient to achieve project-specific, clean-up goals.

Results from confirmation sampling were used to determine whether additional excavation was required at each remediated area. If LRG, URG, or TCLP criteria were exceeded, the boundaries of the excavation were extended in accordance with the Phase 2 - SAP protocol, and additional confirmation samples were collected.

Refer to Figures 3-1 through 3-14 for the location of passing confirmation soil samples and Tables 3-2 through 3-14 for corresponding analytical results at each excavation area for



Sites L2, L5, L23A, M3, M4, and M12. The Enslys<sup>®</sup> test kit and XRF unit results calculated during Phase 2 RA activities are included in Appendix C.

### **3.6.1 Laboratories**

As specified in the Final Quality Assurance Project Plan, Revision 2 - Addendum 1, (MWH, October 2005) (Final QAPP), both an on-site mobile laboratory and an off-site fixed laboratory were to be used to implement the project-required analytical methods. The on-site mobile laboratory was used to analyze appropriate SRU1 and SRU3 soils using Enslys<sup>®</sup> test kits and SRU2 and SRU3 soils using an XRF unit. TestAmerica of University Park, Illinois, (formerly STL) was selected as the off-site analytical contractor for fixed-laboratory analysis.

### **3.6.2 Analytical Parameters**

Confirmation sampling activities were completed using the sampling methodologies identified in the Field Sampling Plan (FSP) contained within the Final Basewide Chemical Data Quality Management Plan (Revision 1) dated June 1999 and the Final QAPP.

As specified in the Final QAPP, initial explosives testing for TNT was performed at the mobile on-site laboratory using Enslys<sup>®</sup> test kits for SRU1 and SRU3 soils. Total explosives were analyzed at the off-site laboratory by SW-846 Method 8330 (full extraction). Samples were analyzed at the off-site laboratory for TCLP 2,4-DNT by SW-846 Method 1311/8270C. The off-site laboratory was also responsible for analyzing water samples using Standard Methods for the Examination of Water and Wastewater.

Initial lead testing for SRU2 and SRU3 soils was performed using an XRF unit to determine the excavation limits. Metals constituents identified in excavation areas and anomaly locations were analyzed by SW-846 Method 6010B in the fixed laboratory. Analysis of TCLP metals was conducted in the fixed laboratory by SW-846 Method 1311/6010B.

The SRU4 soils were not analyzed by a Clor-n-soil<sup>®</sup> PCB Screening Kit as specified in the Final QAPP but were analyzed for PCBs and/or PCNs at the off-site laboratory by SW-846 Method 8082. The SRU5 soils were analyzed for PAHs at the off-site laboratory by SW-846 Method 8270C.

### **3.6.3 Analytical Results**

Areas designated for excavation by Phase 2 - RD/RA Workplan were excavated and sampled until the analytical results were below the LRG, URG, and TCLP criteria designated by the Phase 2 - SAP and the Final QAPP. The confirmation sampling protocol for the SRU1, SRU2, SRU3, SRU4, and SRU5 soils is summarized in the following subsections. The Data Validation Report for the soil samples collected during the RA activities is presented in Appendix F.



### 3.6.3.1 SRU1 Soil Analytical Results

Confirmation samples collected from SRU1 excavations were analyzed using Ensysis® test kits. Ensysis® test kits were initially used to determine whether the concentration of a sample from an excavation exceeded the URG for TNT. If a sample exceeded the established URG, the excavation was continued until Ensysis® test kit analysis indicated that concentrations were below the URG.

Quality assurance/quality control protocol listed in the Ensysis® Soil Test System User Guide was implemented during Phase 2 RA activities at the on-site laboratory as listed below:

- Prior to sample analysis the spectrophotometer was zeroed and a daily TNT control sample was analyzed to verify parameters consistent with the User Guide recommendations.
- Individual samples calculated to be above 30 mg/kg TNT (column 6 on lab test kit sheets) before multiplying by the dilution factor, were re-diluted and re-analyzed, to comply with the Ensysis® Test Kit analysis QA/QC protocol.
- If blue coloration was detected in a sample following addition of the TNT developer, the sample was allowed to develop for a 10-minute period to allow for a DNT colorimetric response. Following the 10-minute development period, the sample was analyzed using standard protocol.
- Test kit analysis was supervised regularly by the MWH QC Manager and periodically by USACE quality assurance (QA) inspectors.
- Trinitrotoluene control samples and TNT developer were not stored in the mobile laboratory trailer during cold weather months to prevent potential freezing.
- Test kit components past the expiration date were discarded.

TNT sample results were determined using the following equation:

$$TNT(ppm) = \frac{ABS_{sample} - (ABS_{initial} \cdot 4)}{0.0323}$$

$ABS_{initial}$  is the spectrophotometer reading of the sample prior to addition of the developer solution and  $ABS_{sample}$  is the spectrophotometer reading of the sample following additional of the developer solution. If the initial reading is higher than the sample reading, it produces a negative value. This negative value is to be interpreted as a non-detect.

Test kit sample results at or below 100 mg/kg for TNT were used as the final confirmation to verify that explosives contamination met LRG and URG criteria for TNT in an excavation.



This 100 mg/kg threshold was discussed and agreed upon by members of the Army, USEPA, and IEPA during the November 2004 Project Management (PM) meeting at JOAAP. Derivation and rationale for implementation of the 100 mg/kg threshold is described in Section 2.4.1 of the Phase 2 – SAP. Test kit samples below the URG but above the 100 mg/kg threshold for TNT were sent to an off-site laboratory and analyzed for total explosives by SW-846 Method 8330.

For all other SRU1 compounds, final confirmation samples were sent to an off-site laboratory and analyzed for total explosives by SW-846 Method 8330. Results from the off-site laboratory were then used to verify that URG and LRG criteria were met over the area of excavation.

Per Section 2.4.1 of the Phase 2 - SAP, if the sample concentration exceeded 20 times the TCLP regulatory level for an SRU1 compound (e.g., 2,4-DNT [20 x 0.13 (mg/L) = 2.6 mg/kg]), then TCLP analysis was performed on that sample to determine if the sample is RCRA hazardous. One sample, JPL2-AP37(0.5) (3.7 mg/kg), was greater than 20 times the TCLP regulatory limit for 2,4-DNT and was sent for TCLP analysis (Table 3-15). The corresponding TCLP result did not exceed the TCLP regulatory limit of 0.13 mg/L.

Confirmation sample results for SRU1 soils at Sites L2 and M3 are provided in Tables 3-3 and 3-12, respectively. Confirmation sample locations for SRU1 soils at Sites L2 and M3 are shown on Figures 3-2 and 3-11, respectively.

#### **3.6.3.2 SRU2 and SRU3 Soil Analytical Results**

Confirmation samples collected for SRU2 excavations were analyzed using a combination of XRF units and an off-site laboratory. Field measurements for metals were conducted using an XRF unit prior to and during excavation. With the exception of lead, horizontal and vertical extent of metals contamination at known release areas were approximated in the field using an XRF unit, with fixed laboratory samples used as final confirmation sample results. An XRF unit provided final confirmation sample results for lead at concentrations at or below 400 mg/kg. Samples with lead results greater than 400 mg/kg were sent to a fixed laboratory for analysis.

Confirmation samples collected for SRU3 excavations were analyzed using a combination of XRF units, Ensysis<sup>®</sup> test kits, and an off-site laboratory. During excavation, if no observable sign of explosives contamination (staining) was present in the soil, and the XRF unit indicated metals concentrations below URGs, a sample was collected for explosives analysis using Ensysis<sup>®</sup> test kits. Excavation activities were conducted, in areas cleared by the XRF unit, until test kit results are less than the URG.

With the exception of lead, samples that passed test kit analysis, were sent to the laboratory and analyzed for total explosives and metals by SW-846 Method 8330 and the appropriate metals analysis. An XRF unit provided final confirmation results for lead at concentrations at or below 400 mg/kg. Samples with lead results greater than 400 mg/kg were sent to a fixed laboratory for analysis. Test kit results at or below 100 ppm for TNT were used as the final



confirmation to confirm closure of an excavation with respect to TNT LRG and URG criteria. Test kit samples below the URG but above the 100 ppm threshold for TNT were sent to an off-site laboratory and analyzed for explosives by SW-846 Method 8330.

Excavations for SRU2 and SRU3 soils were conducted as delineated on the Figures 1-3 through 1-8b. If no visible signs of contamination were present, and the limits and depths of excavations shown on Figures 1-3 through 1-8b were reached, samples were collected and sent to the off-site laboratory and analyzed for metals and/or explosives, as appropriate. Ensysis<sup>®</sup> test kit TNT results, XRF unit lead results, and laboratory analytical results were used to verify that LRG and URG criteria are met over the area of excavation and associated fringe areas.

Per Section 2.4.2 of the Phase 2 - SAP, if the sample result exceeded 20 times the TCLP regulatory levels for an SRU2 compound (e.g., lead  $[20 \times 5 \text{ (mg/L)} = 100 \text{ mg/kg}]$ ) or SRU3 compound (e.g., 2,4-DNT  $[20 \times 0.13 = 2.6 \text{ mg/kg}]$ ), then TCLP analysis was performed on that sample to determine if the sample is RCRA hazardous. If the sample concentration exceeded the URG for any SRU2 or SRU3 compound, additional excavation was conducted in the location of the failing sample, and no TCLP analysis was performed. No SRU3 samples exceeded 20 times the TCLP regulatory limit for 2,4-DNT. The SRU2 and SRU3 samples that were greater than 20 times the TCLP regulatory limit for lead that were sent for TCLP analysis are listed in Table 3-16. The corresponding TCLP results did not exceed the TCLP regulatory limit of 5 mg/L.

Three samples at Site M3 were not analyzed for TCLP lead when the lead result was greater than 100 mg/kg these included JPM3-ITF-AF92(2) (125 mg/kg), JPM3-ITF-AP21(1) (263 mg/kg), and JPM3-ITF-AP85(1) (121 mg/kg). Based on the extensive analysis of Site M3 samples for TCLP lead, it is unlikely that these samples had exceedances of the TCLP regulatory limit of 5 mg/L.

Confirmation sample results for SRU2 and SRU3 soils at Sites L2, L5, L23A, M3, M4, and M12 are provided in Tables 3-2 through 3-5 and 3-7 through 3-14. Confirmation sample locations for SRU2 and SRU3 soils at Sites L2, L5, L23A, M3, M4, and M12 are shown on Figures 3-1 through 3-4 and 3-6 through 3-14.

#### **3.6.4 SRU4 Soil Analytical Results**

Soils were not characterized using a Clor-n-soil<sup>®</sup> PCB Screening Kit as described in the Phase 2 - RD/RA Workplan. Confirmation samples from the SRU4 excavations at Site L5 were analyzed at an off-site laboratory. During PCBs characterization at the former Junk Pile Area, PCNs were detected in addition to PCBs. The October 1998 ROD did not establish LRG and URG criteria for PCNs; therefore, they were compared to the LRG and URG criteria for PCBs.



Confirmation sample results for SRU4 soils at Site L5 are provided in Tables 3-8 and 3-9. Confirmation sample locations for SRU4 soils at Site L5 are shown on Figures 3-7, 3-8a, and 3-8b.

### **3.6.5 SRU5 Soil Analytical Results**

Confirmation samples from the SRU5 excavation at Site L5 were analyzed at an off-site laboratory. Excavation for SRU5 contamination were conducted to the lateral and vertical extent delineated on the design drawings in the Phase 2 - RD/RA Workplan. Once no visible signs of contamination were present and the limits and depth of excavation from the design drawings had been reached, a sample was collected and sent to the off-site laboratory and analyzed for PAHs using SW-846 Method 8270C. There are no TCLP limits for the PAH compounds listed in the June 2004 ROD as SRU5 COCs; therefore, no TCLP SVOCs analysis were conducted during RA confirmation sampling activities.

Confirmation sample results for SRU5 soils at Site L5 are provided in Table 3-6. Confirmation sample locations for SRU5 soils at Site L5 are shown on Figure 3-5.

### **3.6.6 Confirmation Sampling**

All confirmation soil samples were grab samples, and were intended to represent the composition of the soil at a given time and place. Every effort was made to collect grab samples having relative proportions or concentrations of all pertinent components that were comparable to those in the sample media. Every effort was made to avoid altering the sample's composition during the sampling process itself and during transport to the laboratory.

Soil samples were collected using stainless steel bowls and trowels. Surface soil samples were collected from the depth interval 0 to 6 inches from the excavation floor or sidewall. Samples were also collected on the sidewall from 2 to 3 feet above the base of the excavation if the depth of excavation exceeded 5 feet. If a pipe entered an excavation area, a confirmation sample was collected from 1 foot below the point where the pipe entered the excavation.

After collection, soil was mixed in a bowl for homogenization. In some instances, primarily due to the safety concern regarding the depth of certain excavations, soil from designated sample locations was gathered using the bucket of an excavator. The sample was then collected from the bucket and mixed using a bowl and a trowel. All sampling equipment was decontaminated prior to collecting each new sample.

Once mixed, soil was transferred to appropriately labeled containers. Field records, including chain-of-custody forms, sample labels, site maps labeled with sample locations were maintained by sampling team personnel. This sampling protocol is described in detail in Appendix B of the FSP (i.e., Part II of the Basewide Chemical Data Quality Management Plan).



#### **3.6.6.1 Lateral Extent Confirmation Sampling**

Samples collected to confirm the lateral extent of area excavations were located a minimum of one per 50 feet along the edge of the excavation, or at a minimum one sample per face of an excavation. Samples collected to confirm the lateral extent of trench excavations were collected from the ground surface (or trench sidewalls if the trench excavation depth was greater than five feet) on both sides of the trench at the following locations along the trench:

- Within the first 10 feet of the beginning of the trench
- Within the first 10 feet of the end of the trench
- At least one additional location between the beginning and end of the trench but not spaced more than 50 feet apart
- At any bends or tees in the trench (may take the place of the above-listed sample requirement)

Sidewall (grab) samples were collected across an area two to three feet above the base of the excavation or at one-half the depth.

#### **3.6.6.2 Vertical Extent Confirmation Sampling**

For area excavations, a minimum of one sample per 1,000 SF was collected to confirm the vertical extent of contamination. Sampling targeted locations that had the highest potential for contamination (such as beneath hot spots, vats, etc.), with additional sampling spread across the remaining base of the excavation.

For trench excavations, a minimum of one sample per 50 feet of the trench excavation was collected to confirm the vertical extent of contamination. At least two vertical confirmation samples were collected per trench excavation. Sample locations were spaced uniformly along the trench, targeting locations with the highest potential for contamination, such as at either end of the trench or at tees or bends in the trench.

#### **3.6.6.3 Polychlorinated Biphenyl Characterization and Confirmation Sampling**

Confirmation samples for PCBs and PCNs were collected following the procedure specified in 40 CFR 761.289. A five-foot grid was oriented over the area of the excavation with the center point of the grid corresponding to the center of the excavation. Each intersection point on the grid is a sampling point. Soil samples collected from each grid point were composited prior to analysis. The following composites were collected:

- Initial Compositing Area: The Initial Compositing Area was a square area sharing the same center point as the sampling grid and covered an area 10 feet by 10 feet. Nine samples collected from the nine grid intersections within this area were composited into one sample for analysis.



- **First Subsequent Compositing Area:** The First Subsequent Compositing Area consisted of a strip, five feet wide, surrounding the Initial Compositing Area. Eight samples were collected from adjacent grid intersections and composited into one sample for analysis.
- **Second Subsequent Compositing area:** The Second Subsequent Compositing Area consisted of a strip, five feet wide, surrounding the First Subsequent Compositing Area. Eight samples were collected from the adjacent grid intersections and composited into one sample for analysis.

Additional Compositing Areas were constructed, as required, in the same manner with each composite sample consisting of eight adjacent samples located around the previous compositing area.

If the PCB or PCN concentration of a confirmation sample exceeded the clean-up goal, the area represented by the composited sample underwent further excavation. Subsequently, a composite sample was collected using the same grid spacing but offset by three feet in both the north-south and east-west directions. This process continued until the confirmation sample met the clean-up goal.

### **3.6.7 Sample Labeling Nomenclature and Building Number Identification**

The following is an explanation/example for interpreting the standard sample identification-labeling scheme on Tables 3-2 through 3-14. Example Sample Identification Number: JPL2-AP22(1)

|     |   |  |
|-----|---|--|
| JP  | = | Joliet Army Ammunition Plant                                       |
| L2  | = | Site L2 (Site Name)  |
| AP  | = | Area Perimeter Sample  |
| 22  | = | Individual Sample Number From Area Perimeter Excavation            |
| (1) | = | 1 ft Deep From Starting Excavation Grade (Sample Collection Depth) |

This method of standardized sample identification was utilized throughout RA sampling activities at Sites L2, L5, L23A, M3, M4, and M12. Other common abbreviations used for sample identification are as follows.

|         |   |  |
|---------|---|--|
| AF      | = | Area Floor Sample                            |
| As      | = | Arsenic Composite Sample                     |
| B(26-2) | = | Building 26-2                                |
| CP      | = | Characterization Perimeter Sample            |
| Cr      | = | Chromium Sample                              |
| ITF     | = | Inside the Fence                             |
| OTF     | = | Outside the Fence                            |
| PCN     | = | Polychlorinated Naphthalene Composite Sample |
| PF      | = | Popping Furnace Sample                       |
| SP      | = | Stockpile Sample                             |



TF        =       Trench Floor Sample  
TP        =       Trench Perimeter Sample

### **3.7 RAW PRODUCT AND MUNITIONS AND EXPLOSIVES OF CONCERN SUPPORT**

No raw product was encountered during RA activities at Sites L2, L5, L23A, M3, M4, and M12. USA Environmental, Inc. performed MEC clearance at Sites L2 and L5. The soils at Sites L2 and L5 were not mechanically screened, as it was more effective to handpick MEC within a grid.

Analog detection and intrusive investigations were performed at Site L2 to 1 foot bgs on 155 grids. During MEC clearance at Site L2, USAE recovered 13,690 pounds of munitions debris (MD) and recovered 4,949 pounds of range residue (RR). Range residue consists of practice munitions, residual scrap from expenditure of high-explosive rounds, and munitions components such as cartridge cases, flare canisters, bomb fins, or expended rocket motors. USA Environmental, Inc. recovered, treated, and/or disposed of 2,143 munitions and explosives of concern/material potentially representing an explosive hazard (MEC/MPPEH) items. The MEC items were drummed and transported to Belson Steel Center Scrap, Inc. for disposal. Thirty-one drums were transported for approximately 17,000 pounds of MEC.

MEC was encountered on the eastern side of the ditch at Site L5 (Appendix A, Photograph 12). USA Environmental, Inc. recovered, treated, and/or disposed of the MEC/MPPEH as it was encountered. The MEC items were drummed and transported to Belson Steel Center Scrap, Inc. for disposal. Sixteen drums were transported for approximately 9,600 pounds of MEC.

A letter of completion for MEC removal activities at Site L2 is provided in Appendix D. A more detailed report addressing MEC activities at Sites L2 and L5 is being prepared by USAE and will be included in the Final Closure Report. No MEC was encountered at Sites L23A, M3, M4, and M12.

### **3.8 STORM WATER MANAGEMENT**

Storm water management at Sites L2, L5, L23A, M3, M4, and M12 was implemented in accordance with the Phase 2 - SWPPP. Storm water was present in the drainage ditch and Sellite Lagoon at Site M12 (Appendix A, Photographs 13 and 14) and following rain events, in the Site M3 excavation (Appendix A, Photograph 15).

Storm water samples were collected to characterize storm water runoff and to confirm:

- Storm water management practices implemented at the work sites were effective



- Constituents in surface water complied with ISWQS and applicable surface water quality criteria listed in the October 1998 ROD

There were 12 rainfall events exceeding 1.0 inch during the course of excavation activities at the sites. Two samples, one upstream and one downstream of the sites with ongoing excavation activities, were collected 24 to 48 hours after the start of each rainfall event. Storm water was collected from the sampling locations identified in the Phase 2 - RD/RA Workplan. Refer to Table 3-17 for a summary of storm water sample results. No storm water samples exceeded ISWQS. Storm water sample locations are shown in Figure 3-15.

- Samples at Site L2 were analyzed for explosives, metals (arsenic, cadmium, copper, lead, silver, and zinc), and TSS.
- Storm water samples were not analyzed at Sites L5 and L23A, as they were not required.
- Samples at Site M3 were analyzed for explosives, metals (antimony, arsenic, barium, cadmium, copper, lead, silver, thallium, and zinc), PAHs, and TSS.
- Samples at Site M4 were analyzed for explosives, lead, and TSS. Although explosives analysis is not required by Phase 2 - RD/RA Workplan it was conducted because SRU1 soils are stockpiled at the site.
- Samples at Site M12 were analyzed for explosives, lead, TSS, and sulfate. It was determined in the October 2006 PM meeting that surface water samples would be periodically analyzed for sulfate at Site M12.

The reporting limits and method detection limits for several PAH compounds were greater than the ISWQS criteria. During data validation, the low-level calibration standard is evaluated as part of the QA/QC process. If a compound is detected above the low-level calibration standard, it is to be reported with a "J" flag as estimated. The PAH low level standard is 0.1 ng/ul. It is utilized and evaluated every time a new ICAL is analyzed and data processed. Although the ISWQS criteria were not met, the PAH compounds were not detected above the low-level calibration standard.

The storm water pollution prevention measures implemented at the sites included covering soil stockpiles with 6 mil Visqueen, installation of silt fencing, and construction of berms and rock check dams. Appendix A, Photograph 16 depicts a typical Visqueen covered stockpile.

### **3.9 HEALTH AND SAFETY**

The RA activities in the exclusion zones were conducted in Level C PPE. No health and safety issues identified in the Phase 2 - Final SSHP were encountered during the RA activities at Sites L2, L5, L23A, M3, M4, and M12.



### **3.10 DECONTAMINATION**

MWH conducted decontamination activities associated with RA activities at Sites L2, L5, L23A, M3, M4, and M12. Haul trucks were loaded from outside of areas with impacted soils during excavation activities. Truck tires did not encounter contaminated soils until they entered the Site M4 BTF exclusion zone for stockpiling of material. The following are site-specific decontamination procedures used during RA activities at Sites L2, L5, L23A, M3, M4, and M12:

- An equipment decontamination facility was not needed at Site L2, L5, L23A, M3, M4, and M12 during RA excavation activities. The exclusion zone was established around the site excavations to allow soil transport and scaling to the Prairie View RDF or Site M4 BTF without decontamination of trucks as they exited the site. Any soil present on excavators was removed using shovels and/or brooms. Temporary equipment decontamination provisions (e.g., rubber bootie washbasins, PPE waste disposal receptacles at isolated sampling locations) were made available at the sites when conditions or events required.
- Hauling trucks were required to wet decontaminate their tires and exterior (if any loose soil was visible) before leaving the Site M4 BTF exclusion zone.
- Truck beds were lined with plastic if excavated soils were saturated with liquid. By doing so, the risk of spilling contaminated liquid from the truck beds during transport was minimized.

All decontamination events were subject to inspection and approval by the USACE Site Representative.

### **3.11 SITE RESTORATION**

Backfilling activities were conducted at individual excavation areas at Sites L2, L5, L23A, M3, M4, and M12 once excavation boundaries were confirmed to meet LRG, URG, and TCLP criteria. The USDA/FS was notified of the borrow sources used during backfilling. Backfilling activities were conducted following a USACE QA inspection at each excavation area. Backfill material was obtained for Sites L2, L5, and L23A from an earthen berm located at Site L7. Spoils piles along the edges of the Site M12 excavation were used to backfill the excavation area.

Due to greater than anticipated excavation quantities at Sites M3 and M4, treated SRU1 soils from the Site M4 BTF were used as a source of backfill material. Following approval by the USEPA, IEPA, and USDA/FS, approximately 14,820 CY of treated SRU1 soils were used as backfill material at Site M3 excavation. The sides of the excavation were pushed in and the



excavation area was converted into a wetland at Site M3. Approximately 7,000 CY of treated SRU1 soils were used as backfill material at Site M4.

Backfill material was placed, compacted, and regraded to drain consistently with adjacent terrain. No excavated or backfilled areas were deemed critical to prevent storm water erosion; therefore, natural revegetation was allowed to take place at the sites. The storm water pollution prevention measures implemented during RA activities were sufficient to prevent erosion until natural revegetation had occurred.

### **3.12 DEMOBILIZATION**

After completion of RA activities at a site, excavation equipment was dry decontaminated. Dry decontamination was conducted using brushes, brooms, and shovels to remove any loose particles of soils from the exterior of the equipment. All equipment and materials involved with excavation activities were demobilized from the last sites on October 31, 2007.

[END OF SECTION]



## 4.0 CHRONOLOGY OF EVENTS

The following table presents a chronology of events specific to construction milestone dates at Sites L2, L5, L23A, M3, M4, and M12. The table begins with the signing of the October 1998 ROD and ends with the submittal of the Final Closure Report.

| Date               | Event   |
|--------------------|---|
| October 27, 1998   | Signing of the October 1998 ROD                   |
| June 2004          | Signing of the June 2004 ROD                      |
| July 7, 2005       | Draft Site Specific Phase 2 RA Workplan Submitted |
| July 7, 2005       | Preparatory Phase Meeting – Phase 2 RA Activities |
| August 31, 2005    | Initial Phase Meeting – Phase 2 RA Activities     |
| October 14, 2005   | Final Phase 2 - RD/RA Workplan Submitted          |
|                    |   |
|                    | <b>SITE L2</b>                                    |
| February 12, 2007  | Mobilization Activities Started                   |
| February 12, 2007  | Soil Excavation and Hauling Activities Started    |
| October 31, 2007   | Excavation Activities Completed                   |
| October 31, 2007   | Backfilling Activities Completed                  |
| October 31, 2007   | Demobilization Activities Completed               |
|                    |   |
|                    | <b>Site L5</b>                                    |
| June 5, 2007       | Mobilization Activities Started                   |
| June 6, 2007       | Soil Excavation and Hauling Activities Started    |
| September 14, 2007 | Excavation Activities Completed                   |
| September 18, 2007 | Backfilling Activities Completed                  |
| September 19, 2007 | Demobilization Activities Completed               |
|                    |   |
|                    | <b>SITE L23A</b>                                  |
| April 5, 2007      | Mobilization Activities Started                   |
| April 5, 2007      | Soil Excavation and Hauling Activities Started    |
| April 30, 2007     | Excavation Activities Completed                   |
| May 18, 2007       | Backfilling Activities Completed                  |
| May 30, 2007       | Demobilization Activities Completed               |
|                    |   |
|                    | <b>SITE M3</b>                                    |
| July 6, 2006       | Mobilization Activities Started                   |
| July 6, 2006       | Soil Excavation and Hauling Activities Started    |
| February 2, 2007   | Excavation Activities Completed                   |
| September 25, 2007 | Backfilling Activities Completed                  |
| September 25, 2007 | Demobilization Activities Completed               |



| Date               | Event  |
|--------------------|--|
|                    | <b>SITE M4</b>   |
| December 6, 2006   | Mobilization Activities Started                        |
| December 6, 2006   | Soil Excavation and Hauling Activities Started         |
| September 21, 2007 | Excavation Activities Completed                        |
| September 24, 2007 | Backfilling Activities Completed                       |
| September 24, 2007 | Demobilization Activities Completed                    |
|                    |  |
|                    | <b>SITE M12</b>  |
| November 14, 2006  | Mobilization Activities Started                        |
| November 14, 2006  | Soil Excavation and Hauling Activities Started         |
| January 10, 2007   | Excavation Activities Completed                        |
| September 26, 2007 | Backfilling Activities Completed                       |
| September 26, 2007 | Demobilization Activities Completed                    |
|                    |  |
| June 15, 2007      | Submittal of Draft Closure Report                      |
| March 6, 2008      | Submittal of Draft Final Closure Report                |
| October 31, 2007   | Decontamination and Demobilization Activities Complete |
| September 18, 2009 | Final Inspection Completed                             |
| September 30, 2009 | Submittal of Final Closure Report                      |

Notes:

TBD            to be determined

[END OF SECTION]



## **5.0 PERFORMANCE STANDARDS AND CONSTRUCTION QUALITY CONTROL**

### **5.1 PERFORMANCE OF SELECTED REMEDY**

The long-term and short-term risk to human health and environment has been significantly reduced at Sites L2, L5, L23A, M3, M4, and M12. The source of contamination (i.e., soils) was removed and extensive confirmation sampling was conducted to verify that no soils above the groundwater table or bedrock elevation with contaminants above LRG, URG, and TCLP criteria remain at the sites. The deviations listed in this closure report are due to isolated instances of interpretation error during construction and do not affect the overall performance or effectiveness of the selected remedies. Soil Remedial Unit 1 soils excavated from Site L2 and M3 and SRU5 soils from L5 have been successfully treated at the Site M4 BTF to meet industrial RGs designated by the October 1998 ROD. Soil Remedial Unit 2, SRU3, SRU4, SRU5, and SRU7 soils were disposed of at the Prairie View RDF, a RCRA Subtitle D facility. The cleanup goals for Sites L2, L5, L23A, M3, M4, and M12 have been achieved.

### **5.2 QUALITY ASSURANCE AND QUALITY CONTROL**

Quality Assurance/Quality Control for construction activities followed the Phase 2 - RD/RA Workplan, Final Phase 2 - Contractor Quality Control Plan, and Final QAPP. The soil sampling and analysis was conducted in accordance with the approved FSP, Phase 2 - SAP and Final QAPP. The deviations listed in this closure report are due to isolated instances of interpretation error during construction and does not reflect the overall performance of QA/QC protocol during RA activities at the site.

### **5.3 DATA QUALITY**

The Data Validated Report for Sites L2, L5, L23A, M3, M4, and M12 is presented in Appendix F on CD-ROM. The report discusses data quality review procedures and usability of the data.

[END OF SECTION]



## **6.0 FINAL INSPECTION AND CERTIFICATIONS**

The final inspection was completed by the USACE on September 18, 2009. Information regarding the final inspection is presented in Appendix G.

[END OF SECTION]



## **7.0 OPERATION AND MAINTENANCE ACTIVITIES**

### **7.1 MONITORING**

The following describe surface water and groundwater monitoring requirements that were or will be conducted at Sites L2, L5, L23A, M3, M4, and M12.

- Groundwater monitoring at Sites L2 and M3 will be required as part of the remedial action for Groundwater Remedial Units 1 and 3 as described in the Sections 9.2.2 and 9.2.4 of the October 1998 ROD. As part of the Groundwater Management Zone for explosives and organics, existing monitoring wells at Sites L2 and M3 will continue to be sampled as part of the selected natural attenuation remedy for groundwater.

### **7.2 MAINTENANCE**

The SOU RA activities and method of remediation conducted at Sites L2, L5, L23A, M3, M4, and M12 are consistent with reuse objectives based on the future land use of the site. Short-term maintenance will be limited to monitoring and repair of existing silt fence and erosion control features as necessary until such time that the property is transferred from the Army to the USDA/FS.

### **7.3 CLOSURE ACTIVITIES**

All SOU RA activities at Sites L2, L5, L23A, M3, M4, and M12 are considered complete.

[END OF SECTION]



## **8.0 OPERABLE UNIT CONTACT INFORMATION**

### **Responsible Party Contact:**

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### **Responsible Party Representative:**

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### **Design and Remediation Contractor:**

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### **USEPA Remedial Project Manager:**

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### **USEPA Oversight Contractor:**

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### **IEPA RPM:**

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[END OF SECTION]



## **9.0 SUMMARY AND CONCLUSIONS**

### **9.1 SUMMARY OF REMEDIAL ACTION FIELD WORK**

Based on the field observations and documentation, MWH concludes that SOU RA activities at Sites L2, L5, L23A, M3, M4, and M12 were completed in conformance with the Phase 2 - RD/RA Workplan with deviations as noted in Section 3.4.

Remedial activities are summarized as follows:

- Remedial action activities at Site L2 were conducted between February 12, 2007, and October 31, 2007. Approximately 946 CY of unscreened SRU1 soils were transported from Site L2 to the Site M4 BTF for stockpiling, screening, and treatment. Approximately 7,092 CY of unscreened SRU2 soils were transported from Site L2 to the Prairie View RDF for disposal.
- Remedial action activities at Site L5 were conducted between June 6, 2007, and September 18, 2007. Approximately 1,383 CY of unscreened SRU2 soils, 27,603 CY of unscreened SRU4 soils, and 344 CY of unscreened SRU5 soils were transported from Site L5 to the Prairie View RDF for disposal.
- Remedial action activities at Site L23A were conducted between April 5, 2007, and May 18, 2007. Approximately 5,492 CY of unscreened SRU2 soils were transported from Site L23A to the Prairie View RDF for disposal.
- Remedial action activities at Site M3 were conducted between July 6, 2006, and September 25, 2007. Approximately 55 CY of unscreened SRU1 soils were transported from Site M3 to the Site M4 BTF for stockpiling, screening, and treatment. Approximately 23,612 CY of unscreened SRU2 and SRU3 soils were transported from Site M3 to the Prairie View RDF for disposal.
- Remedial action activities at Site M4 were conducted between December 6, 2006, and September 24, 2007. Approximately 8,150 CY of unscreened SRU2 soils were transported from Site M4 to the Prairie View RDF for disposal.
- Remedial action activities at Site M12 were conducted between November 14, 2006, and September 27, 2007. Approximately 8,469 CY of unscreened SRU2 and SRU7 soils were transported from Site M12 to the Prairie View RDF for disposal.
- Confirmation soil sampling has verified that the areas of contamination identified by the RI/FS, which were above the groundwater table and bedrock elevation, have been successfully excavated to meet the LRG, URG, and TCLP criteria established by the October 1998 and June 2004 RODs.



- During MEC clearance at Site L2, USAE recovered 13,690 pounds of munitions debris (MD) and recovered 4,949 pounds of RR. USA Environmental, Inc. recovered, treated, and/or disposed of 2,143 MEC/MPPEH items. The MEC items were drummed and transported to Belson Steel Center Scrap, Inc. for disposal. Thirty-one drums were transported for approximately 17,000 pounds of MEC.
- During MEC clearance at Site L5, USAE recovered, treated, and/or disposed of the MEC/MPPEH as it was encountered. The MEC items were drummed and transported to Belson Steel Center Scrap, Inc. for disposal. Sixteen drums were transported for approximately 9,600 pounds of MEC.
- Storm water pollution prevention measures were implemented in accordance with the Phase 2 – SWPPP.
- Excavation areas have been backfilled with on-site material from the surrounding topography or with treated soil from the Site M4 BTF (Sites M3 and M4). Excavations were backfilled and regraded to prevent ponding and promote proper drainage. No excavated or backfilled areas were deemed critical to prevent storm water erosion; therefore, natural revegetation was allowed to take place at the sites. The storm water pollution prevention measures implemented during RA activities were sufficient to prevent erosion until natural revegetation had occurred.

## **9.2 CONCLUSIONS**

Excavation activities at Sites L2, L5, L23A, M3, M4, and M12 are complete. All areas above the groundwater table and bedrock elevation that were identified by the RI/FS, subsequent characterization sampling, and visual inspection have been excavated to satisfy LRG, URG, and TCLP criteria established in the October 1998 and June 2004 RODs. With monitoring procedures and deed restrictions in place, the listed properties are ready to be transferred for their intended recreational use.

## **9.3 RECOMMENDATIONS AND LESSONS LEARNED**

The following recommendations are presented to summarize lessons learned for use during future RA activities:

- Continue the utilization of Ensysis<sup>®</sup> test kits and XRF units. The use of Ensysis<sup>®</sup> test kits and XRF units greatly enhanced the ability of the field excavation teams to make quick decisions regarding excavation areas. The results were returned within an hour and gave a general idea of the levels of contamination. The use of the Ensysis<sup>®</sup> test kits and XRF units reduced the cost of the fixed laboratory.



- The use of visual observation to determine contamination should only be used to declare a “suspect area.” Often, red staining was visible but the test kits and confirmation laboratory results indicated that contamination levels were well below LRGs and URGs.
- Efficiency was gained during RA activities by having a sufficient number of sample technicians to collect samples. An increased number of sample technicians helped to minimize periods of excavator inactivity during test kit sample analysis. A 1:1 ratio for sample technicians to excavators is optimum for maintaining an efficient excavation/sampling process.
- Open avenues of communication between USACE and the RA contractor are a key element to facilitating continual smooth operations on a large-scale, multi-year, RA project.

[END OF SECTION]



## 10.0 REFERENCES

Dames & Moore, July 1993, *Final Phase I Remedial Investigation Report (RI), Loading – Assemble – Package (LAP) Area, Joliet Army Ammunition Plant (JOAAP), Joliet, Illinois*, Volumes 1&2 of 2 prepared for U.S. Army Environmental Center.

Dames & Moore, December 1994, *Phase 2 Remedial Investigation, Load-Assemble-Package (LAP) Area, Joliet Army Ammunition Plant, Joliet, Illinois*, Volumes 1 and 2, prepared for U.S. Army Environmental Center, Report No. SFIM-AEC-IR-CR-95023.

Dames & Moore, 1995, *Waste Classification and Volume Estimates Plan, Joliet Army Ammunition Plant, Joliet, Illinois*.

Montgomery Watson, April 1999, *Final Remedial Design / Remedial Action Workplan – Phase I, Soils Operable Unit, Joliet Army Ammunition Plant, Wilmington, Illinois*.

MWH, October 2005, *Final Remedial Design / Remedial Action Workplan – Phase 2, Soils Operable Unit, Joliet Army Ammunition Plant, Wilmington, Illinois*.

MWH, October 2005, *Final Quality Assurance Project Plan, Revision 2 –Addendum 1, Joliet Army Ammunition Plant, Wilmington, Illinois*.

U.S. Army, October 1998, *Record of Decision for the Soil and Groundwater Operable Units on the Manufacturing and Load-Assemble-Package Areas, National Priority List Sites, Joliet Army Ammunition Plant, Wilmington, Will County, Illinois*.

U.S. Army, June 2004, *Final Record of Decision for the Soil Operable Unit Interim Sites, Joliet Army Ammunition Plant, Wilmington, Will County, Illinois*.

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## TABLES



Table 3-1

**Standing Liquid and Sludge Sample Results**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

| Sample ID                         | JPM3-ITF-VATSLUDGE |       | JPM3-VATPROFILE |       | JPL2-POPH20 |       | JPL2-ASTLIQUID |       | JPM4-EXCAVATION WATER |       | JPM4-LEAD AZIDE LAGOON EXCAVATION |       |
|-----------------------------------|--------------------|-------|-----------------|-------|-------------|-------|----------------|-------|-----------------------|-------|-----------------------------------|-------|
| Sample Date                       | 8/4/2006           |       | 7/26/2006       |       | 3/13/2007   |       | 5/24/2007      |       | 6/7/2007              |       | 12/7/2006                         |       |
| Sample Matrix                     | Sludge             |       | Water           |       | Water       |       | Water          |       | Water                 |       | Water                             |       |
| Analyte                           | Result             | Units | Result          | Units | Result      | Units | Result         | Units | Result                | Units | Result                            | Units |
| <b>Volatile Organic Compounds</b> |                    |       |                 |       |             |       |                |       |                       |       |                                   |       |
| 1,1,1,2-Tetrachloroethane         | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,1,1-Trichloroethane             | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,1,2,2-Tetrachloroethane         | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,1,2-Trichloroethane             | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,1-Dichloroethane                | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,1-Dichloroethene                | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,1-Dichloropropene               | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,2,3-Trichlorobenzene            | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,2,3-Trichloropropane            | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,2,4-Trichlorobenzene            | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,2,4-Trimethylbenzene            | 480                | µg/kg | 2.3             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,2-Dibromo-3-chloropropane       | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,2-Dibromoethane (EDB)           | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,2-Dichlorobenzene               | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,2-Dichloroethane                | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,2-Dichloropropane               | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,3,5-Trimethylbenzene            | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,3-Dichlorobenzene               | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,3-Dichloropropane               | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,4-Dichlorobenzene               | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 2,2-Dichloropropane               | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 2-Butanone (MEK)                  | 200 U              | µg/kg | 5 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 2-Chlorotoluene                   | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 2-Hexanone                        | 200 U              | µg/kg | 5 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 4-Chlorotoluene                   | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 4-Methyl-2-pentanone (MIBK)       | 200 U              | µg/kg | 5 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Acetone                           | 400 U              | µg/kg | 12              | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Benzene                           | 240                | µg/kg | 1.9             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Bromobenzene                      | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |



Table 3-1

Standing Liquid and Sludge Sample Results  
 Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
 Phase 2 Remedial Action  
 Joliet Army Ammunition Plant  
 Wilmington, Illinois

| Sample ID                         | JPM3-ITF-VATSLUDGE |       | JPM3-VATPROFILE |       | JPL2-POPH20 |       | JPL2-ASTLIQUID |       | JPM4-EXCAVATION WATER |       | JPM4-LEAD AZIDE LAGOON EXCAVATION |       |
|-----------------------------------|--------------------|-------|-----------------|-------|-------------|-------|----------------|-------|-----------------------|-------|-----------------------------------|-------|
| Sample Date                       | 8/4/2006           |       | 7/26/2006       |       | 3/13/2007   |       | 5/24/2007      |       | 6/7/2007              |       | 12/7/2006                         |       |
| Sample Matrix                     | Sludge             |       | Water           |       | Water       |       | Water          |       | Water                 |       | Water                             |       |
| Analyte                           | Result             | Units | Result          | Units | Result      | Units | Result         | Units | Result                | Units | Result                            | Units |
| <b>Volatile Organic Compounds</b> |                    |       |                 |       |             |       |                |       |                       |       |                                   |       |
| Bromochloromethane                | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Bromodichloromethane              | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Bromoform                         | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Bromomethane                      | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Carbon disulfide                  | 200 U              | µg/kg | 5 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Carbon tetrachloride              | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Chlorobenzene                     | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Chloroethane                      | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Chloroform                        | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Chloromethane                     | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| cis-1,2-Dichloroethene            | 300                | µg/kg | 4.2             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| cis-1,3-Dichloropropene           | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Dibromochloromethane              | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Dibromomethane                    | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Dichlorodifluoromethane           | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Ethylbenzene                      | 50 U               | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Hexachlorobutadiene               | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Isopropylbenzene                  | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| m&p-Xylenes                       | 100 U              | µg/kg | 2 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Methylene chloride                | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Methyl-tert-butyl-ether (MTBE)    | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Naphthalene                       | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| n-Butylbenzene                    | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| n-Propylbenzene                   | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| o-Xylene                          | 50 U               | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| p-Isopropyltoluene                | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| sec-Butylbenzene                  | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Styrene                           | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| tert-Butylbenzene                 | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |



Table 3-1

**Standing Liquid and Sludge Sample Results**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

| Sample ID                              | JPM3-ITF-VATSLUDGE |       | JPM3-VATPROFILE |       | JPL2-POPH20 |       | JPL2-ASTLIQUID |       | JPM4-EXCAVATION WATER |       | JPM4-LEAD AZIDE LAGOON EXCAVATION |       |
|--|--------------------|-------|-----------------|-------|-------------|-------|----------------|-------|-----------------------|-------|-----------------------------------|-------|
| Sample Date                            | 8/4/2006           |       | 7/26/2006       |       | 3/13/2007   |       | 5/24/2007      |       | 6/7/2007              |       | 12/7/2006                         |       |
| Sample Matrix                          | Sludge             |       | Water           |       | Water       |       | Water          |       | Water                 |       | Water                             |       |
| Analyte                                | Result             | Units | Result          | Units | Result      | Units | Result         | Units | Result                | Units | Result                            | Units |
| <b>Volatile Organic Compounds</b>      |                    |       |                 |       |             |       |                |       |                       |       |                                   |       |
| Tetrachloroethene                      | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Toluene                                | 50 U               | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| trans-1,2-Dichloroethene               | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| trans-1,3-Dichloropropene              | 100 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Trichloroethene                        | 50 U               | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Trichlorofluoromethane                 | 200 U              | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Vinyl chloride                         | 50 U               | µg/kg | 1 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| <b>Semi-volatile Organic Compounds</b> |                    |       |                 |       |             |       |                |       |                       |       |                                   |       |
| 1,2,4-Trichlorobenzene                 | 660 U              | µg/kg | 20 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,2-Dichlorobenzene                    | 660 U              | µg/kg | 20 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,3-Dichlorobenzene                    | 660 U              | µg/kg | 20 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 1,4-Dichlorobenzene                    | 660 U              | µg/kg | 20 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 2,2-Oxybis (1-chloropropane)           | 660 U              | µg/kg | 20 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 2,4,5-Trichlorophenol                  | 1,300 U            | µg/kg | 100 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 2,4,6-Trichlorophenol                  | 1,300 U            | µg/kg | 51 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 2,4-Dichlorophenol                     | 1,300 U            | µg/kg | 100 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 2,4-Dimethylphenol                     | 1,300 U            | µg/kg | 100 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 2,4-Dinitrophenol                      | 2,700 U            | µg/kg | 200 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 2,4-Dinitrotoluene                     | 660 U              | µg/kg | 10 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 2,6-Dinitrotoluene                     | 660 U              | µg/kg | 5.1 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 2-Chloronaphthalene                    | 660 U              | µg/kg | 20 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 2-Chlorophenol                         | 660 U              | µg/kg | 51 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 2-Methylnaphthalene                    | 620 J              | µg/kg | 3.3 J           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 2-Methylphenol (o-cresol)              | 660 U              | µg/kg | 20 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 2-Nitroaniline                         | 660 U              | µg/kg | 51 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 2-Nitrophenol                          | 1,300 U            | µg/kg | 100 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 3,3-Dichlorobenzidine                  | 660 U              | µg/kg | 51 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 3-Nitroaniline                         | 1,300 U            | µg/kg | 100 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 4,6-Dinitro-2-methylphenol             | 1,300 U            | µg/kg | 200 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |



Table 3-1

**Standing Liquid and Sludge Sample Results**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

| Sample ID                              | JPM3-ITF-VATSLUDGE |       | JPM3-VATPROFILE |       | JPL2-POPH20 |       | JPL2-ASTLIQUID |       | JPM4-EXCAVATION WATER |       | JPM4-LEAD AZIDE LAGOON EXCAVATION |       |
|--|--------------------|-------|-----------------|-------|-------------|-------|----------------|-------|-----------------------|-------|-----------------------------------|-------|
| Sample Date                            | 8/4/2006           |       | 7/26/2006       |       | 3/13/2007   |       | 5/24/2007      |       | 6/7/2007              |       | 12/7/2006                         |       |
| Sample Matrix                          | Sludge             |       | Water           |       | Water       |       | Water          |       | Water                 |       | Water                             |       |
| Analyte                                | Result             | Units | Result          | Units | Result      | Units | Result         | Units | Result                | Units | Result                            | Units |
| <b>Semi-volatile Organic Compounds</b> |                    |       |                 |       |             |       |                |       |                       |       |                                   |       |
| 4-Bromophenyl phenyl ether             | 660 U              | µg/kg | 51 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 4-Chloro-3-methylphenol                | 1,300 U            | µg/kg | 100 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 4-Chloroaniline                        | 2,700 U            | µg/kg | 100 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 4-Chlorophenyl phenyl ether            | 660 U              | µg/kg | 51 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 4-Methylphenol (m/p-cresol)            | 660 U              | µg/kg | 20 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 4-Nitroaniline                         | 1,300 U            | µg/kg | 100 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| 4-Nitrophenol                          | 2,700 U            | µg/kg | 200 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Acenaphthene                           | 130 U              | µg/kg | 10 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Acenaphthylene                         | 130 U              | µg/kg | 10 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Antracene                              | 96 J               | µg/kg | 10 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Benzidine                              | 2,700 U            | µg/kg | 400 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Benzo(a)anthracene                     | 130 U              | µg/kg | 2 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Benzo(a)pyrene                         | 130 U              | µg/kg | 2 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Benzo(b)fluoranthene                   | 130 U              | µg/kg | 2 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Benzo(ghi)perylene                     | 130 U              | µg/kg | 10 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Benzo(k)fluoranthene                   | 130 U              | µg/kg | 2 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Benzoic acid                           | 6,600 U            | µg/kg | 200 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Benzyl alcohol                         | 1,300 U            | µg/kg | 200 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Bis (2-chloroethoxy) methane           | 660 U              | µg/kg | 20 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Bis (2-chloroethyl) ether              | 660 U              | µg/kg | 20 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Bis (2-ethylhexyl) phthalate           | 640 J              | µg/kg | 100 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Butyl benzyl phthalate                 | 660 U              | µg/kg | 20 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Carbazole                              | 660 U              | µg/kg | 51 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Chrysene                               | 120 J              | µg/kg | 5.1 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Dibenzo(a,h)anthracene                 | 130 U              | µg/kg | 3 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Dibenzofuran                           | 660 U              | µg/kg | 20 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Diethyl phthalate                      | 660 U              | µg/kg | 20 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Dimethyl phthalate                     | 660 U              | µg/kg | 20 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Di-n-butyl phthalate                   | 660 U              | µg/kg | 51 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |



Table 3-1

**Standing Liquid and Sludge Sample Results**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

| Sample ID                              | JPM3-ITF-VATSLUDGE |       | JPM3-VATPROFILE |       | JPL2-POPH20 |       | JPL2-ASTLIQUID |       | JPM4-EXCAVATION WATER |       | JPM4-LEAD AZIDE LAGOON EXCAVATION |       |
|--|--------------------|-------|-----------------|-------|-------------|-------|----------------|-------|-----------------------|-------|-----------------------------------|-------|
| Sample Date                            | 8/4/2006           |       | 7/26/2006       |       | 3/13/2007   |       | 5/24/2007      |       | 6/7/2007              |       | 12/7/2006                         |       |
| Sample Matrix                          | Sludge             |       | Water           |       | Water       |       | Water          |       | Water                 |       | Water                             |       |
| Analyte                                | Result             | Units | Result          | Units | Result      | Units | Result         | Units | Result                | Units | Result                            | Units |
| <b>Semi-volatile Organic Compounds</b> |                    |       |                 |       |             |       |                |       |                       |       |                                   |       |
| Di-n-octyl phthalate                   | 660 U              | µg/kg | 100 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Fluoranthene                           | 130 U              | µg/kg | 10 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Fluorene                               | 89 J               | µg/kg | 10 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Hexachlorobenzene                      | 270 U              | µg/kg | 5.1 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Hexachlorobutadiene                    | 660 U              | µg/kg | 51 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Hexachlorocyclopentadiene              | 2,700 U            | µg/kg | 200 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Hexachloroethane                       | 660 U              | µg/kg | 51 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Indeno(1,2,3-cd)pyrene                 | 130 U              | µg/kg | 2 U             | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Isophorone                             | 660 U              | µg/kg | 20 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Naphthalene                            | 110 J              | µg/kg | 10 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Nitrobenzene                           | 130 U              | µg/kg | 10 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| n-Nitroso-di-n-propylamine             | 660 U              | µg/kg | 5.1 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| n-Nitrosodiphenylamine                 | 660 U              | µg/kg | 10 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Pentachlorophenol                      | 2,700 U            | µg/kg | 100 U           | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Phenanthrene                           | 380                | µg/kg | 10 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Phenol                                 | 660 U              | µg/kg | 51 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Pyrene                                 | 130                | µg/kg | 10 U            | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| <b>Polychlorinated Biphenyls</b>       |                    |       |                 |       |             |       |                |       |                       |       |                                   |       |
| Aroclor 1016                           | 16 U               | µg/kg | 0.51 U          | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Aroclor 1221                           | 16 U               | µg/kg | 0.51 U          | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Aroclor 1232                           | 16 U               | µg/kg | 0.51 U          | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Aroclor 1242                           | 16 U               | µg/kg | 0.51 U          | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Aroclor 1248                           | 16 U               | µg/kg | 0.51 U          | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Aroclor 1254                           | 28                 | µg/kg | 0.51 U          | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Aroclor 1260                           | 16 U               | µg/kg | 0.51 U          | µg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| <b>Explosives</b>                      |                    |       |                 |       |             |       |                |       |                       |       |                                   |       |
| 1,3,5-Trinitrobenzene                  | 1,200 U            | µg/kg | 2.8 U           | µg/L  | 0.44 U      | µg/L  | --             | --    | NA                    | NA    | 0.39 U                            | µg/L  |
| 1,3-Dinitrobenzene                     | 1,200 U            | µg/kg | 2.8 U           | µg/L  | 0.44 U      | µg/L  | --             | --    | NA                    | NA    | 0.39 U                            | µg/L  |
| 2,4,6-TNT                              | 1,200 U            | µg/kg | 2.8 U           | µg/L  | 0.44 U      | µg/L  | --             | --    | NA                    | NA    | 0.39 U                            | µg/L  |



Table 3-1

**Standing Liquid and Sludge Sample Results**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

| Sample ID                           | JPM3-ITF-VATSLUDGE |       | JPM3-VATPROFILE |       | JPL2-POPH20 |       | JPL2-ASTLIQUID |       | JPM4-EXCAVATION WATER |       | JPM4-LEAD AZIDE LAGOON EXCAVATION |       |
|-------------------------------------|--------------------|-------|-----------------|-------|-------------|-------|----------------|-------|-----------------------|-------|-----------------------------------|-------|
| Sample Date                         | 8/4/2006           |       | 7/26/2006       |       | 3/13/2007   |       | 5/24/2007      |       | 6/7/2007              |       | 12/7/2006                         |       |
| Sample Matrix                       | Sludge             |       | Water           |       | Water       |       | Water          |       | Water                 |       | Water                             |       |
| Analyte                             | Result             | Units | Result          | Units | Result      | Units | Result         | Units | Result                | Units | Result                            | Units |
| <b>Explosives</b>                   |                    |       |                 |       |             |       |                |       |                       |       |                                   |       |
| 2,4-Dinitrotoluene                  | 1,200 U            | µg/kg | 5.5 U           | µg/L  | 0.44 U      | µg/L  | --             | --    | 0.54                  | µg/L  | 0.39 U                            | µg/L  |
| 2,6-Dinitrotoluene                  | 2,400 U            | µg/kg | 5.5 U           | µg/L  | 0.88 U      | µg/L  | --             | --    | NA                    | NA    | 0.78 U                            | µg/L  |
| 2-Amino-4,6-Dinitrotoluene          | 2,400 U            | µg/kg | 5.5 U           | µg/L  | 0.88 U      | µg/L  | --             | --    | NA                    | NA    | 0.83                              | µg/L  |
| 2-Nitrotoluene                      | 2,400 U            | µg/kg | 5.5 U           | µg/L  | 0.88 U      | µg/L  | --             | --    | NA                    | NA    | 0.78 U                            | µg/L  |
| 3-Nitrotoluene                      | 2,400 U            | µg/kg | 5.5 U           | µg/L  | 0.88 U      | µg/L  | --             | --    | NA                    | NA    | 0.78 U                            | µg/L  |
| 4-Amino-2,6-Dinitrotoluene          | 2,400 U            | µg/kg | 5.5 U           | µg/L  | 0.88 U      | µg/L  | --             | --    | NA                    | NA    | 2.2                               | µg/L  |
| 4-Nitrotoluene                      | 970 U              | µg/kg | 5.5 U           | µg/L  | 0.88 U      | µg/L  | --             | --    | NA                    | NA    | 0.78 U                            | µg/L  |
| HMX                                 | 2,400 U            | µg/kg | 5.5 U           | µg/L  | 0.88 U      | µg/L  | --             | --    | 2.5                   | µg/L  | 0.78 U                            | µg/L  |
| Nitrobenzene                        | 1,200 U            | µg/kg | 2.8 U           | µg/L  | 0.44 U      | µg/L  | --             | --    | NA                    | NA    | 0.39 U                            | µg/L  |
| RDX                                 | 1,200 U            | µg/kg | 2.8 U           | µg/L  | 0.44 U      | µg/L  | --             | --    | 7.7                   | µg/L  | 1.8                               | µg/L  |
| Tetryl                              | 2,400 U            | µg/kg | 6.9 U           | µg/L  | 0.88 U      | µg/L  | --             | --    | NA                    | NA    | 0.78 U                            | µg/L  |
| <b>Total Petroleum Hydrocarbons</b> |                    |       |                 |       |             |       |                |       |                       |       |                                   |       |
| Diesel range organics               | 14,000             | mg/kg | 17              | mg/L  | --          | --    | 830,000        | mg/kg | --                    | --    | --                                | --    |
| Gasoline range organics             | 13,000             | µg/kg | 47 J            | µg/L  | --          | --    | 17,000,000     | ug/kg | --                    | --    | --                                | --    |
| <b>Metals</b>                       |                    |       |                 |       |             |       |                |       |                       |       |                                   |       |
| Aluminum                            | --                 | --    | 0.041 B         | mg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Antimony                            | 0.09 B             | mg/kg | 0.02 U          | mg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Arsenic                             | 0.16               | mg/kg | 0.026           | mg/L  | 0.010 U     | mg/L  | --             | --    | --                    | --    | --                                | --    |
| Barium                              | 4.8                | mg/kg | 0.072           | mg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Beryllium                           | --                 | --    | 0.004 U         | mg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Cadium                              | 0.01 B             | mg/kg | 0.002 U         | mg/L  | 0.0027      | mg/L  | --             | --    | --                    | --    | --                                | --    |
| Calcium                             | --                 | --    | 31              | mg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Chromium                            | 1.4                | mg/kg | 0.01            | mg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Cobalt                              | --                 | --    | 0.002 B         | mg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Copper                              | 5.8                | mg/kg | 0.026           | mg/L  | 0.061       | mg/L  | --             | --    | 0.0024 J              | mg/L  | --                                | --    |
| Iron                                | --                 | --    | 3.8             | mg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Lead                                | 20                 | mg/kg | 0.082           | mg/L  | 0.024       | mg/L  | --             | --    | 0.018                 | mg/L  | 0.043                             | mg/L  |
| Magnesium                           | --                 | --    | 9.3             | mg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Manganese                           | --                 | --    | 0.038           | mg/L  | --          | --    | --             | --    | --                    | --    | --                                | --    |



Table 3-1

**Standing Liquid and Sludge Sample Results**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

| Sample ID                     | JPM3-ITF-VATSLUDGE |           | JPM3-VATPROFILE |           | JPL2-POPH20 |       | JPL2-ASTLIQUID |       | JPM4-EXCAVATION WATER |       | JPM4-LEAD AZIDE LAGOON EXCAVATION |       |
|-------------------------------|--------------------|-----------|-----------------|-----------|-------------|-------|----------------|-------|-----------------------|-------|-----------------------------------|-------|
| Sample Date                   | 8/4/2006           |           | 7/26/2006       |           | 3/13/2007   |       | 5/24/2007      |       | 6/7/2007              |       | 12/7/2006                         |       |
| Sample Matrix                 | Sludge             |           | Water           |           | Water       |       | Water          |       | Water                 |       | Water                             |       |
| Analyte                       | Result             | Units     | Result          | Units     | Result      | Units | Result         | Units | Result                | Units | Result                            | Units |
| <b>Metals</b>                 |                    |           |                 |           |             |       |                |       |                       |       |                                   |       |
| Mercury                       | 0.017 U            | mg/kg     | 0.15 B          | µg/L      | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Nickel                        | --                 | --        | 0.029           | mg/L      | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Potassium                     | --                 | --        | 360             | mg/L      | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Selenium                      | 0.1 U              | mg/kg     | 0.01 U          | mg/L      | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Silver                        | 0.05 U             | mg/kg     | 0.0011 B        | mg/L      | 0.0072      | mg/L  | --             | --    | 0.0011 JB             | mg/L  | --                                | --    |
| Sodium                        | --                 | --        | 760             | mg/L      | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Thallium                      | 0.1 U              | mg/kg     | 0.01 U          | mg/L      | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Vanadium                      | --                 | --        | 0.0031 B        | mg/L      | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Zinc                          | 3.2                | mg/kg     | 0.026           | mg/L      | 1           | mg/L  | --             | --    | 0.0064 J              | mg/L  | --                                | --    |
| <b>Miscellaneous Analyses</b> |                    |           |                 |           |             |       |                |       |                       |       |                                   |       |
| Ignitability                  | >200               | Degrees F | >200            | Degrees F | --          | --    | --             | --    | --                    | --    | --                                | --    |
| pH                            | 8.3                | pH units  | 9.38            | pH units  | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Reactive Cyanide              | 0.27 U             | mg/kg     | 0.0027 B        | mg/L      | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Reactive Sulfide              | 23 B               | mg/kg     | 5.6             | mg/L      | --          | --    | --             | --    | --                    | --    | --                                | --    |
| Total Suspended Solids        | --                 | --        | --              | --        | --          | --    | --             | --    | 5.5                   | mg/L  | --                                | --    |

Notes:

-- = not analyzed

F = Fahrenheit

mg/kg = milligrams per kilogram

µg/kg = micrograms per kilogram

Qualifiers

B = Analyte detected in laboratory blank

J = Result is estimated

U = Analyte not present at detectable levels



**Table 3-2**

**Characterization Soil Sample Results**  
**Site L2 - North-South Burning Pads**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|                    |                       | Test Kit Results <sup>1</sup> | XRF Unit Results |
|--------------------|-----------------------|-------------------------------|------------------|
| Sample Designation | Sample Identification | 2,4,6-TNT (mg/kg)             | Lead (mg/kg)     |
| LRG                |                       | 200                           | 500              |
| URG                |                       | 459                           | 500              |
| CP1                | JPL2-CP1(1)           | 0.4136                        | 38               |
| CP2                | JPL2-CP2(1)           | -0.348                        | 26               |
| CP3                | JPL2-CP3(1)           | -0.851                        | 25               |
| CP4                | JPL2-CP4(1)           | -1.08                         | 35               |
| CP5                | JPL2-CP5(1)           | -1.044                        | 22               |
| CP6                | JPL2-CP6(1)           | -0.735                        | 27               |
| CP7                | JPL2-CP7(1)           | -0.812                        | 32               |
| CP8                | JPL2-CP8(1)           | -1.96                         | 37               |
| CP9                | JPL2-CP9(1)           | -0.8125                       | 24               |
| CP10               | JPL2-CP10(1)          | 169.89                        | 40               |
| CP11               | JPL2-CP11(1)          | -0.775                        | 35               |
| CP12               | JPL2-CP12(1)          | -0.735                        | 28               |
| CP13               | JPL2-CP13(1)          | 0.93                          | 60               |
| CP14               | JPL2-CP14(1)          | 1.27                          | 37               |
| CP15               | JPL2-CP15(1)          | 0.657                         | 23               |
| CP16               | JPL2-CP16(1)          | 0.155                         | 30               |
| CP17               | JPL2-CP17(1)          | -0.193                        | 26               |
| CP18               | JPL2-CP18(1)          | 0.58                          | <19              |
| CP19               | JPL2-CP19(1)          | 0.541                         | 22               |
| CP20               | JPL2-CP20(1)          | 0.0386                        | 52               |
| CP21               | JPL2-CP21(1)          | 0.696                         | 34               |
| CP22               | JPL2-CP22(1)          | 0.541                         | 50               |
| CP23               | JPL2-CP23(1)          | 0.038                         | 42               |
| CP24               | JPL2-CP24(1)          | 0.348                         | 28               |
| CP25               | JPL2-CP25(1)          | -0.775                        | 86               |
| CP26               | JPL2-CP26(1)          | 0.348                         | 150              |

**Notes:**<sup>1</sup> Negative test kit results are to be interpreted as non-detects.

LRG = lower remediation goal

mg/kg = milligrams per kilogram

TNT = trinitrotoluene

URG = upper remediation goal

XRF = x-ray fluorescence



Table 3-3

**Confirmation and Characterization Soil Sampling Results**  
**Site L2 - East-West Burning Pads**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|                    |                       | Test Kit Results <sup>1</sup> | XRF Unit Results | Fixed Laboratory Results |                   |                 |             |              |
|--------------------|-----------------------|-------------------------------|------------------|--------------------------|-------------------|-----------------|-------------|--------------|
| Sample Designation | Sample Identification | 2,4,6-TNT (mg/kg)             | Lead (mg/kg)     | 1,3,5-TNB (mg/kg)        | 2,4,6-TNT (mg/kg) | 2,4-DNT (mg/kg) | RDX (mg/kg) | Lead (mg/kg) |
| LRG                |                       | 200                           | 500              | 17                       | 200               | 20              | 107         | 500          |
| URG                |                       | 459                           | 500              | 386                      | 459               | 20              | 125         | 500          |
| AF14               | JPL2-AF14(8)          | -1.586                        | --               | --                       | --                | --              | --          | --           |
| AF15               | JPL2-AF15(8)          | -2.631                        | --               | --                       | --                | --              | --          | --           |
| AF16               | JPL2-AF16(8)          | -2.28                         | --               | --                       | --                | --              | --          | --           |
| AF17               | JPL2-AF17(8)          | -2.36                         | --               | --                       | --                | --              | --          | --           |
| AF18               | JPL2-AF18(8)          | -2.2                          | --               | --                       | --                | --              | --          | --           |
| AF19               | JPL2-AF19(2)          | -0.232                        | --               | --                       | --                | --              | --          | --           |
| AF20               | JPL2-AF20(2)          | --                            | --               | 0.24 U                   | 0.24 U            | 0.24 U          | 0.24 U      | --           |
| AF21               | JPL2-AF21(2)          | -1.08                         | --               | --                       | --                | --              | --          | --           |
| AF22               | JPL2-AF22(2)          | -1.43                         | --               | --                       | --                | --              | --          | --           |
| AF23               | JPL2-AF23(2)          | 0.386                         | --               | --                       | --                | --              | --          | --           |
| AF24               | JPL2-AF24(2)          | 0.154                         | --               | --                       | --                | --              | --          | --           |
| AF25               | JPL2-AF25(2)          | --                            | --               | 0.25 U                   | 0.25 U            | 0.25 U          | 0.25 U      | --           |
| AF26               | JPL2-AF26(2)          | 0.27                          | --               | --                       | --                | --              | --          | --           |
| AF27               | JPL2-AF27(2)          | -0.541                        | --               | --                       | --                | --              | --          | --           |
| AF28               | JPL2-AF28(2)          | --                            | --               | 0.24 U                   | 0.24 U            | 0.24 U          | 0.24 U      | --           |
| AF29               | JPL2-AF29(2)          | --                            | --               | 0.24 U                   | 0.24 U            | 0.24 U          | 0.24 U      | --           |
| AF30               | JPL2-AF30(1)          | --                            | --               | 0.24 U                   | 1.3               | 0.26            | 0.4         | --           |
| AF31               | JPL2-AF31(1)          | --                            | --               | 0.25 U                   | 3                 | 0.25 U          | 1.5         | --           |
| AF32               | JPL2-AF32(1)          | --                            | --               | 0.25 U                   | 3.8               | 0.25 U          | 0.78        | --           |
| AF33               | JPL2-AF33(1)          | --                            | --               | 1.5                      | 4.4               | 0.25 U          | 1.9         | --           |
| AF37               | JPL2-AF37(2)          | --                            | --               | 0.25 U                   | 6.5               | 0.25 U          | 0.25 U      | --           |
| AF38               | JPL2-AF38(2)          | --                            | --               | 0.25 U                   | 0.46              | 0.25 U          | 0.59        | --           |
| AF39               | JPL2-AF39(2)          | --                            | --               | 0.25 U                   | 0.25 U            | 0.25 U          | 0.25 U      | --           |
| AF40               | JPL2-AF40(2)          | --                            | --               | 0.25 U                   | 0.25 U            | 0.25 U          | 0.25 U      | --           |



Table 3-3

**Confirmation and Characterization Soil Sampling Results**  
**Site L2 - East-West Burning Pads**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|                    |                       | Test Kit Results <sup>1</sup> | XRF Unit Results | Fixed Laboratory Results |                   |                 |             |              |
|--------------------|-----------------------|-------------------------------|------------------|--------------------------|-------------------|-----------------|-------------|--------------|
| Sample Designation | Sample Identification | 2,4,6-TNT (mg/kg)             | Lead (mg/kg)     | 1,3,5-TNB (mg/kg)        | 2,4,6-TNT (mg/kg) | 2,4-DNT (mg/kg) | RDX (mg/kg) | Lead (mg/kg) |
| LRG                |                       | 200                           | 500              | 17                       | 200               | 20              | 107         | 500          |
| URG                |                       | 459                           | 500              | 386                      | 459               | 20              | 125         | 500          |
| AF41               | JPL2-AF41(2)          | --                            | --               | 0.4                      | 4.6               | 0.25 U          | 2.3         | --           |
| AF42               | JPL2-AF42(2)          | --                            | --               | 0.24 U                   | 2.1               | 0.24 U          | 0.24 U      | --           |
| AF43               | JPL2-AF43(2)          | --                            | --               | 0.24 U                   | 0.24 U            | 0.24 U          | 0.24 U      | --           |
| AF59               | JPL2-AF59(2)          | --                            | --               | --                       | --                | --              | --          | 18           |
| AF60               | JPL2-AF60(2)          | --                            | --               | --                       | --                | --              | --          | 15           |
| AF61               | JPL2-AF61(2)          | --                            | --               | --                       | --                | --              | --          | 26           |
| AF64               | JPL2-AF64(1)          | --                            | --               | --                       | --                | --              | --          | 14           |
| AF65               | JPL2-AF65(1)          | --                            | --               | --                       | --                | --              | --          | 240          |
| AF66               | JPL2-AF66(1)          | --                            | --               | --                       | --                | --              | --          | 15           |
| AP1                | JPL2-AP1(1)           | 0.116                         | --               | --                       | --                | --              | --          | --           |
| AP2                | JPL2-AP2(1)           | -0.1547                       | --               | --                       | --                | --              | --          | --           |
| AP3                | JPL2-AP3(1)           | -0.464                        | --               | --                       | --                | --              | --          | --           |
| AP4                | JPL2-AP4(2)           | 0.154                         | --               | --                       | --                | --              | --          | --           |
| AP5                | JPL2-AP5(2)           | -0.154                        | --               | --                       | --                | --              | --          | --           |
| AP6                | JPL2-AP6(2)           | -0.464                        | --               | --                       | --                | --              | --          | --           |
| AP7                | JPL2-AP7(2)           | -0.696                        | --               | --                       | --                | --              | --          | --           |
| AP8                | JPL2-AP8(1)           | -0.967                        | --               | --                       | --                | --              | --          | --           |
| AP9                | JPL2-AP9(1)           | -1.16                         | --               | --                       | --                | --              | --          | --           |
| AP10               | JPL2-AP10(1)          | -1.74                         | --               | --                       | --                | --              | --          | --           |
| AP11               | JPL2-AP11(1)          | -1.58                         | --               | --                       | --                | --              | --          | --           |
| AP12               | JPL2-AP12(3)          | -1.547                        | --               | --                       | --                | --              | --          | --           |
| AP13               | JPL2-AP13(3)          | -1.664                        | --               | --                       | --                | --              | --          | --           |
| AP14               | JPL2-AP14(3)          | -1.818                        | --               | --                       | --                | --              | --          | --           |
| AP15               | JPL2-AP15(6)          | -0.878                        | --               | --                       | --                | --              | --          | --           |



Table 3-3

**Confirmation and Characterization Soil Sampling Results**  
**Site L2 - East-West Burning Pads**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|                    |                       | Test Kit Results <sup>1</sup> | XRF Unit Results | Fixed Laboratory Results |                   |                 |             |              |
|--------------------|-----------------------|-------------------------------|------------------|--------------------------|-------------------|-----------------|-------------|--------------|
| Sample Designation | Sample Identification | 2,4,6-TNT (mg/kg)             | Lead (mg/kg)     | 1,3,5-TNB (mg/kg)        | 2,4,6-TNT (mg/kg) | 2,4-DNT (mg/kg) | RDX (mg/kg) | Lead (mg/kg) |
| LRG                |                       | 200                           | 500              | 17                       | 200               | 20              | 107         | 500          |
| URG                |                       | 459                           | 500              | 386                      | 459               | 20              | 125         | 500          |
| AP16               | JPL2-AP16(6)          | -1.393                        | --               | --                       | --                | --              | --          | --           |
| AP17               | JPL2-AP17(6)          | -1.702                        | --               | --                       | --                | --              | --          | --           |
| AP18               | JPL2-AP18(6)          | -1.354                        | --               | --                       | --                | --              | --          | --           |
| AP19               | JPL2-AP19(6)          | -1.664                        | --               | --                       | --                | --              | --          | --           |
| AP20               | JPL2-AP20(6)          | -1.509                        | --               | --                       | --                | --              | --          | --           |
| AP21               | JPL2-AP21(6)          | -1.664                        | --               | --                       | --                | --              | --          | --           |
| AP22               | JPL2-AP22(1)          | --                            | --               | 0.25 U                   | 0.25 U            | 0.25 U          | 0.25 U      | --           |
| AP23               | JPL2-AP23(1)          | --                            | --               | 0.25 U                   | 0.25 U            | 0.25 U          | 0.25 U      | --           |
| AP24               | JPL2-AP24(1)          | -1.664                        | --               | --                       | --                | --              | --          | --           |
| AP25               | JPL2-AP25(1)          | -1.741                        | --               | --                       | --                | --              | --          | --           |
| AP26               | JPL2-AP26(1)          | -1.625                        | --               | --                       | --                | --              | --          | --           |
| AP27               | JPL2-AP27(1)          | -0.541                        | --               | --                       | --                | --              | --          | --           |
| AP28               | JPL2-AP28(1)          | -1.005                        | --               | --                       | --                | --              | --          | --           |
| AP29               | JPL2-AP29(1)          | -0.232                        | --               | --                       | --                | --              | --          | --           |
| AP30               | JPL2-AP30(1)          | 0.812                         | --               | --                       | --                | --              | --          | --           |
| AP31               | JPL2-AP31(1)          | 0.154                         | --               | --                       | --                | --              | --          | --           |
| AP32               | JPL2-AP32(1)          | -0.348                        | --               | --                       | --                | --              | --          | --           |
| AP33               | JPL2-AP33(1)          | -1.006                        | --               | --                       | --                | --              | --          | --           |
| AP34               | JPL2-AP34(1)          | --                            | --               | 0.24 U                   | 0.24 U            | 0.24 U          | 0.24 U      | --           |
| AP35               | JPL2-AP35(1)          | --                            | --               | 0.24 U                   | 0.24 U            | 0.24 U          | 0.24 U      | --           |
| AP36               | JPL2-AP36(0.5)        | --                            | --               | 0.24 U                   | 0.76              | 0.32            | 0.24 U      | --           |
| AP37               | JPL2-AP37(0.5)        | --                            | --               | 2.7                      | 48                | 3.7             | 0.4         | --           |
| AP38               | JPL2-AP38(0.5)        | --                            | --               | 0.25 U                   | 17                | 0.25 U          | 1.1         | --           |
| AP39               | JPL2-AP39(0.5)        | --                            | --               | 0.83                     | 42                | 0.64            | 0.48        | --           |



Table 3-3

**Confirmation and Characterization Soil Sampling Results**  
**Site L2 - East-West Burning Pads**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|                    |                       | Test Kit Results <sup>1</sup> | XRF Unit Results | Fixed Laboratory Results |                   |                 |             |              |
|--------------------|-----------------------|-------------------------------|------------------|--------------------------|-------------------|-----------------|-------------|--------------|
| Sample Designation | Sample Identification | 2,4,6-TNT (mg/kg)             | Lead (mg/kg)     | 1,3,5-TNB (mg/kg)        | 2,4,6-TNT (mg/kg) | 2,4-DNT (mg/kg) | RDX (mg/kg) | Lead (mg/kg) |
| LRG                |                       | 200                           | 500              | 17                       | 200               | 20              | 107         | 500          |
| URG                |                       | 459                           | 500              | 386                      | 459               | 20              | 125         | 500          |
| AP40               | JPL2-AP40(0.5)        | --                            | --               | 4.5                      | 110               | 0.3             | 13          | --           |
| AP41               | JPL2-AP41(0.5)        | --                            | --               | 7.5                      | 92                | 0.23 U          | 1.4         | --           |
| AP45               | JPL2-AP45(0.5)        | --                            | --               | 12                       | 33                | 1.7             | 6.2         | --           |
| AP46               | JPL2-AP46(0.5)        | --                            | --               | 0.52                     | 3                 | 0.25 U          | 14          | --           |
| AP47               | JPL2-AP47(0.5)        | --                            | --               | 0.25 U                   | 2.9               | 0.53            | 4.9         | --           |
| AP49               | JPL2-AP49(0.5)        | --                            | --               | 1.2                      | 8.7               | 0.25 U          | 0.28        | --           |
| AP51               | JPL2-AP51(0.5)        | --                            | --               | 0.25 U                   | 0.62              | 0.25 U          | 0.59        | --           |
| AP52               | JPL2-AP52(0.5)        | --                            | --               | 0.25 U                   | 0.32              | 0.25 U          | 0.25 U      | --           |
| AP57               | JPL2-AP57(0.5)        | --                            | --               | 5.6                      | 17                | 0.43            | 2.6         | --           |
| AP58               | JPL2-AP58(0.5)        | --                            | --               | 0.83                     | 13                | 0.26            | 0.81        | --           |
| AP59               | JPL2-AP59(0.5)        | --                            | --               | 0.25 U                   | 43                | 0.25 U          | 0.25 U      | --           |
| AP61               | JPL2-AP61(0.5)        | --                            | --               | 0.47                     | 31                | 0.25 U          | 0.39        | --           |
| AP62               | JPL2-AP62(0.5)        | --                            | --               | 0.25 U                   | 2.4               | 0.25 U          | 0.25 U      | --           |
| AP63               | JPL2-AP63(0.5)        | --                            | --               | 1.1                      | 4.9               | 0.43            | 0.86        | --           |
| AP64               | JPL2-AP64(0.5)        | --                            | --               | 0.37                     | 3.2               | 0.44            | 1.2         | --           |
| AP65               | JPL2-AP65(0.5)        | --                            | --               | 1.1                      | 40                | 0.65            | 6.6         | --           |
| AP66               | JPL2-AP66(0.5)        | --                            | --               | 0.25                     | 0.8               | 0.25 U          | 0.25 U      | --           |
| AP67               | JPL2-AP67(0.5)        | --                            | --               | 0.25 U                   | 1                 | 0.25 U          | 0.25 U      | --           |
| AP70               | JPL2-AP70(0.5)        | --                            | --               | 0.25 U                   | 120               | 0.25 U          | 0.25 U      | --           |
| AP71               | JPL2-AP71(0.5)        | --                            | --               | 0.49                     | 46                | 0.25 U          | 0.25 U      | --           |
| AP73               | JPL2-AP73(0.5)        | --                            | --               | 0.74                     | 19                | 0.6             | 1.5         | --           |
| AP74               | JPL2-AP74(0.5)        | --                            | --               | 0.25 U                   | 0.79              | 0.25 U          | 0.25 U      | --           |
| AP75               | JPL2-AP75(0.5)        | --                            | --               | 5.3                      | 88                | 0.45            | 47          | --           |
| AP79               | JPL2-AP79(0.5)        | --                            | --               | 0.66                     | 4.1               | 0.25 U          | 0.33        | --           |



Table 3-3

**Confirmation and Characterization Soil Sampling Results**  
**Site L2 - East-West Burning Pads**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|                    |                           | Test Kit Results <sup>1</sup> | XRF Unit Results | Fixed Laboratory Results |                   |                 |             |              |
|--------------------|---------------------------|-------------------------------|------------------|--------------------------|-------------------|-----------------|-------------|--------------|
| Sample Designation | Sample Identification     | 2,4,6-TNT (mg/kg)             | Lead (mg/kg)     | 1,3,5-TNB (mg/kg)        | 2,4,6-TNT (mg/kg) | 2,4-DNT (mg/kg) | RDX (mg/kg) | Lead (mg/kg) |
| LRG                |                           | 200                           | 500              | 17                       | 200               | 20              | 107         | 500          |
| URG                |                           | 459                           | 500              | 386                      | 459               | 20              | 125         | 500          |
| AP80               | JPL2-AP80(0.5)            | --                            | --               | 3.5                      | 100               | 1               | 0.73        | --           |
| AP82               | JPL2-AP82(0.5)            | --                            | --               | 0.25 U                   | 2.6               | 0.25 U          | 0.25 U      | --           |
| AP83               | JPL2-AP83(0.5)            | --                            | --               | 0.25 U                   | 0.46              | 0.25 U          | 0.25 U      | --           |
| AP84               | JPL2-AP84(0.5)            | --                            | --               | 0.25 U                   | 0.42              | 0.25 U          | 0.3         | --           |
| AP85               | JPL2-AP85(0.5)            | --                            | --               | 0.25 U                   | 0.25 U            | 0.25 U          | 3.6         | --           |
| AP86               | JPL2-AP86(0.5)            | --                            | --               | 0.25 U                   | 0.25 U            | 0.25 U          | 0.25 U      | --           |
| AP88               | JPL2-AP88(0.5)            | --                            | --               | 0.78                     | 2.1               | 0.25 U          | 0.25 U      | --           |
| AP89               | JPL2-AP89(0.5)            | --                            | --               | 0.55                     | 1.6               | 0.25 U          | 0.27        | --           |
| AP90               | JPL2-AP90(0.5)            | --                            | --               | 0.25 U                   | 0.42              | 0.25 U          | 0.25 U      | --           |
| AP91               | JPL2-AP91(0.5)            | --                            | --               | 0.25 U                   | 3.2               | 0.25 U          | 4.3         | --           |
| AP92               | JPL2-AP92(0.5)            | --                            | --               | 2.4                      | 7.3               | 0.51            | 1.5         | --           |
| AP93               | JPL2-AP93(0.5)            | --                            | --               | 0.25 U                   | 0.67              | 0.25 U          | 1.6         | --           |
| AP94               | JPL2-AP94(0.5)            | --                            | --               | 0.25 U                   | 0.25 U            | 0.25 U          | 2.3         | --           |
| AP125              | JPL2-AP125(0.5)           | --                            | --               | --                       | --                | --              | --          | 68           |
| AP126              | JPL2-AP126(0.5)           | --                            | --               | --                       | --                | --              | --          | 33           |
| AP127              | JPL2-AP127(0.5)           | --                            | --               | --                       | --                | --              | --          | 28           |
| AP128              | JPL2-AP128(0.5)           | --                            | --               | --                       | --                | --              | --          | 40           |
| AP149              | JPL2-AP149(0.5)           | --                            | --               | --                       | --                | --              | --          | 40           |
| AP150              | JPL2-AP150(0.5)           | --                            | --               | --                       | --                | --              | --          | 36           |
| AP151              | JPL2-AP151(0.5)           | --                            | --               | --                       | --                | --              | --          | 56           |
| AP152              | JPL2-AP152(0.5)           | --                            | --               | --                       | --                | --              | --          | 29           |
| AS-A, -B, -C, -D   | JPL2-AS(0.5) <sup>2</sup> | --                            | --               | --                       | --                | --              | --          | --           |
| CP27               | JPL2-CP27(1)              | 5.76                          | --               | --                       | --                | --              | --          | --           |
| CP28               | JPL2-CP28(1)              | -0.773                        | --               | --                       | --                | --              | --          | --           |



Table 3-3

**Confirmation and Characterization Soil Sampling Results**  
**Site L2 - East-West Burning Pads**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|                    |                       | Test Kit Results <sup>1</sup> | XRF Unit Results | Fixed Laboratory Results |                   |                 |             |              |
|--------------------|-----------------------|-------------------------------|------------------|--------------------------|-------------------|-----------------|-------------|--------------|
| Sample Designation | Sample Identification | 2,4,6-TNT (mg/kg)             | Lead (mg/kg)     | 1,3,5-TNB (mg/kg)        | 2,4,6-TNT (mg/kg) | 2,4-DNT (mg/kg) | RDX (mg/kg) | Lead (mg/kg) |
|                    | LRG                   | 200                           | 500              | 17                       | 200               | 20              | 107         | 500          |
|                    | URG                   | 459                           | 500              | 386                      | 459               | 20              | 125         | 500          |
| CP29               | JPL2-CP29(1)          | -0.851                        | --               | --                       | --                | --              | --          | --           |
| CP30               | JPL2-CP30(1)          | -0.0146                       | --               | --                       | --                | --              | --          | --           |
| CP31               | JPL2-CP31(1)          | --                            | --               | 0.25 U                   | 1.7               | 0.25 U          | 0.25 U      | --           |
| CP33               | JPL2-CP33(1)          | 0.851                         | --               | --                       | --                | --              | --          | --           |
| CP34               | JPL2-CP34(1)          | 5.45                          | --               | --                       | --                | --              | --          | --           |
| CP35               | JPL2-CP35(1)          | 0.464                         | --               | --                       | --                | --              | --          | --           |
| CP37               | JPL2-CP37(1)          | --                            | <19              | 0.32                     | 5.4               | 0.24 U          | 0.24 U      | --           |
| CP38               | JPL2-CP38(1)          | --                            | --               | 0.25 U                   | 31                | 0.25 U          | 0.25 U      | --           |
| CP41               | JPL2-CP41(1)          | --                            | --               | 0.25 U                   | 0.94              | 0.25 U          | 0.25 U      | --           |
| CP43               | JPL2-CP43(1)          | --                            | --               | 0.25 U                   | 2.5               | 0.25 U          | 0.25 U      | --           |
| CP44               | JPL2-CP44(1)          | 2.274                         | --               | --                       | --                | --              | --          | --           |
| CP45               | JPL2-CP45(1)          | 1.292                         | 91               | --                       | --                | --              | --          | --           |
| CP46               | JPL2-CP46(1)          | 6.25                          | --               | --                       | --                | --              | --          | --           |
| CP47               | JPL2-CP47(1)          | 2.688                         | --               | --                       | --                | --              | --          | --           |
| CP48               | JPL2-CP48(1)          | 125.01                        | --               | --                       | --                | --              | --          | --           |
| CP55               | JPL2-CP55(2)          | -2.378                        | --               | --                       | --                | --              | --          | --           |
| CP56               | JPL2-CP56(4)          | -2.43                         | --               | --                       | --                | --              | --          | --           |
| CP57               | JPL2-CP57(2)          | -1.87                         | --               | --                       | --                | --              | --          | --           |
| CP58               | JPL2-CP58(4)          | -1.702                        | --               | --                       | --                | --              | --          | --           |
| CP59               | JPL2-CP59(2)          | -2.28                         | --               | --                       | --                | --              | --          | --           |
| CP60               | JPL2-CP60(4)          | -1.04                         | --               | --                       | --                | --              | --          | --           |
| CP61               | JPL2-CP61(2)          | --                            | --               | 0.25 U                   | 0.25 U            | 0.25 U          | 0.25 U      | --           |
| CP62               | JPL2-CP62(2)          | --                            | --               | 0.25 U                   | 0.25 U            | 0.25 U          | 0.25 U      | --           |
| CP63               | JPL2-CP63(2)          | --                            | --               | 0.25 U                   | 0.25 U            | 0.25 U          | 0.25 U      | --           |



Table 3-3

**Confirmation and Characterization Soil Sampling Results**  
**Site L2 - East-West Burning Pads**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|                    |                       | Test Kit Results <sup>1</sup> | XRF Unit Results | Fixed Laboratory Results |                   |                 |             |              |
|--------------------|-----------------------|-------------------------------|------------------|--------------------------|-------------------|-----------------|-------------|--------------|
| Sample Designation | Sample Identification | 2,4,6-TNT (mg/kg)             | Lead (mg/kg)     | 1,3,5-TNB (mg/kg)        | 2,4,6-TNT (mg/kg) | 2,4-DNT (mg/kg) | RDX (mg/kg) | Lead (mg/kg) |
| LRG                |                       | 200                           | 500              | 17                       | 200               | 20              | 107         | 500          |
| URG                |                       | 459                           | 500              | 386                      | 459               | 20              | 125         | 500          |
| CP64               | JPL2-CP64(2)          | --                            | --               | 0.25 U                   | 5                 | 0.25 U          | 0.25 U      | --           |
| CP65               | JPL2-CP65(2)          | --                            | --               | 0.25 U                   | 0.25 U            | 0.25 U          | 0.4         | --           |
| CP66               | JPL2-CP66(0.5)        | --                            | --               | 0.25 U                   | 1.2               | 0.25 U          | 0.25 U      | --           |
| CP67               | JPL2-CP67(0.5)        | --                            | --               | 0.25 U                   | 0.25 U            | 0.25 U          | 0.25 U      | --           |
| CP68               | JPL2-CP68(0.5)        | --                            | --               | 0.25 U                   | 0.25 U            | 0.25 U          | 0.25 U      | --           |
| CP69               | JPL2-CP69(8)          | --                            | --               | 0.25 U                   | 0.25 U            | 0.25 U          | 4.4         | --           |
| CP70               | JPL2-CP70(8)          | --                            | --               | 0.25 U                   | 0.25 U            | 0.25 U          | 3.8         | --           |
| CP71               | JPL2-CP71(8)          | --                            | --               | 0.25 U                   | 0.25 U            | 0.25 U          | 5.7         | --           |
| CP72               | JPL2-CP72(8)          | --                            | --               | 0.25 U                   | 0.25 U            | 0.25 U          | 7.1         | --           |
| CP73               | JPL2-CP73(0.5)        | --                            | --               | 0.25 U                   | 0.25 U            | 0.25 U          | 0.25 U      | --           |
| CP74               | JPL2-CP74(0.5)        | --                            | --               | 0.25 U                   | 0.51              | 0.25 U          | 0.25 U      | --           |
| CP75               | JPL2-CP75(0.5)        | --                            | --               | 0.25 U                   | 0.54              | 0.25 U          | 0.25 U      | --           |
| CP76               | JPL2-CP76(0.5)        | --                            | --               | 0.25 U                   | 0.33              | 0.25 U          | 0.25 U      | --           |
| CP77               | JPL2-CP77(0.5)        | --                            | --               | 0.25 U                   | 2.6               | 0.25 U          | 0.25 U      | --           |
| CP79               | JPL2-CP79(0.5)        | --                            | --               | 0.24 U                   | 2.6               | 0.24 U          | 0.24 U      | --           |
| CP81               | JPL2-CP81(0.5)        | --                            | --               | 0.25 U                   | 8.9               | 0.25 U          | 0.25 U      | --           |
| CP82               | JPL2-CP82(0.5)        | --                            | --               | 0.25 U                   | 0.7               | 0.25 U          | 0.25 U      | --           |
| CP85               | JPL2-CP85(0.5)        | --                            | --               | 0.37                     | 11                | 0.25 U          | 0.68        | --           |
| CP87               | JPL2-CP87(0.5)        | --                            | --               | 0.25 U                   | 1.6               | 0.25 U          | 0.25 U      | --           |
| CP88               | JPL2-CP88(0.5)        | --                            | --               | 0.25 U                   | 3.9               | 0.25 U          | 0.25 U      | --           |
| CP89               | JPL2-CP89(0.5)        | --                            | --               | 0.27                     | 89                | 0.25 U          | 0.25 U      | --           |
| CP92               | JPL2-CP92(0.5)        | --                            | --               | 2.8                      | 8.8               | 0.44            | 4.9         | --           |
| CP93               | JPL2-CP93(0.5)        | --                            | --               | --                       | --                | --              | --          | 89           |
| CP95               | JPL2-CP95(0.5)        | --                            | --               | --                       | 4.3               | --              | 3           | 260          |



**Table 3-3**

**Confirmation and Characterization Soil Sampling Results  
Site L2 - East-West Burning Pads  
Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
Phase 2 Remedial Action  
Joliet Army Ammunition Plant  
Wilmington, Illinois**

|                    |                       | Test Kit Results <sup>1</sup> | XRF Unit Results | Fixed Laboratory Results |                   |                 |             |              |
|--------------------|-----------------------|-------------------------------|------------------|--------------------------|-------------------|-----------------|-------------|--------------|
| Sample Designation | Sample Identification | 2,4,6-TNT (mg/kg)             | Lead (mg/kg)     | 1,3,5-TNB (mg/kg)        | 2,4,6-TNT (mg/kg) | 2,4-DNT (mg/kg) | RDX (mg/kg) | Lead (mg/kg) |
| LRG                |                       | 200                           | 500              | 17                       | 200               | 20              | 107         | 500          |
| URG                |                       | 459                           | 500              | 386                      | 459               | 20              | 125         | 500          |
| CP96               | JPL2-CP96(0.5)        | --                            | --               | --                       | 0.69              | --              | 0.3         | 210          |
| CP97               | JPL2-CP97(0.5)        | --                            | --               | --                       | 0.25 U            | --              | 0.25 U      | 160          |
| SP1                | JPL2-SP1(0)           | --                            | --               | 0.78                     | 20                | 0.25 U          | 1.3         | --           |
| SP2                | JPL2-SP2(0)           | --                            | --               | 0.33                     | 9.1               | 0.3             | 0.25 U      | --           |
| SP4                | JPL2-SP4(1)           | --                            | --               | 0.25 U                   | 0.25 U            | 0.25 U          | 0.25 U      | --           |

Notes:

<sup>1</sup> Negative test kit results are to be interpreted as non-detects.

<sup>2</sup> Sample JPL2-AS(0.5) is a composite of sample locations AS-A, AS-B, AS-C, and AS-D

-- = not analyzed

DNT = dinitrotoluene

LRG = lower remediation goal

mg/kg = milligrams per kilogram

RDX = royal demolition explosive

TNB = trinitrobenzene

TNT = trinitrotoluene

URG = upper remediation goal

XRF = x-ray fluorescence

Qualifiers:

B = The compound was also detected in the method blank.

U = Indicates that the compound or analyte was analyzed for, but not detected above the stated limit.



Table 3-4

**Confirmation Soil Sample Results**  
**Site L2 - Former Popping Furnaces Area**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|                              |                       | Fixed Laboratory Results |                 |                |              |                |              |                 |                 |                      |                        |                    |                            |
|------------------------------|-----------------------|--------------------------|-----------------|----------------|--------------|----------------|--------------|-----------------|-----------------|----------------------|------------------------|--------------------|----------------------------|
| Sample Designation           | Sample Identification | Arsenic (mg/kg)          | Cadmium (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Silver (mg/kg) | Zinc (mg/kg) | TPH-DRO (mg/kg) | TPH-GRO (mg/kg) | Acenaphthene (ug/kg) | Acenaphthylene (ug/kg) | Anthracene (ug/kg) | Benzo(a)anthracene (ug/kg) |
|                              | LRG                   | 21                       | 63              | 190            | 500          | 16             | 720          | 2,500           | 2,500           | 98,386,000           | NE                     | 491,930,000        | 17,000                     |
|                              | URG                   | 84                       | 220             | 925            | 500          | 9,467          | 2,500        | 2,500           | 2,500           | 98,386,000           | NE                     | 491,930,000        | 17,000                     |
| Former Popping Furnaces Area |                       |                          |                 |                |              |                |              |                 |                 |                      |                        |                    |                            |
| AF34                         | JPL2-AF34(2)          | 16                       | 0.48            | 44             | 24           | 0.13 B         | 98           | -               | -               | -                    | -                      | -                  | -                          |
| AF35                         | JPL2-AF35(2)          | 8.2                      | 3.5             | 43             | 21           | 0.12 B         | 91           | -               | -               | -                    | -                      | -                  | -                          |
| AF36                         | JPL2-AF36(2)          | 6.5                      | 0.58            | 20             | 16           | 0.12 B         | 57           | -               | -               | -                    | -                      | -                  | -                          |
| AF44                         | JPL2-AF44(2)          | 6.9                      | 4.5             | 81             | 25           | 0.60 B         | 140          | -               | -               | -                    | -                      | -                  | -                          |
| AF47                         | JPL2-AF47(2)          | 12                       | 0.23 U          | 32             | 18           | 0.19 B         | 76           | -               | -               | -                    | -                      | -                  | -                          |
| AF48                         | JPL2-AF48(2)          | 8.4                      | 0.27 U          | 26             | 17           | 0.32 B         | 58           | -               | -               | -                    | -                      | -                  | -                          |
| AF49                         | JPL2-AF49(2)          | 7.5                      | 0.22 U          | 21             | 15           | 0.54 U         | 54           | -               | -               | -                    | -                      | -                  | -                          |
| AF50                         | JPL2-AF50(3)          | 11                       | -               | -              | -            | -              | -            | -               | -               | -                    | -                      | -                  | -                          |
| AF51                         | JPL2-AF51(3)          | -                        | -               | 79             | -            | -              | 150          | -               | -               | -                    | -                      | -                  | -                          |
| AF52                         | JPL2-AF52(2)          | 13                       | 0.24 U          | 32             | 20           | 0.19 B         | 71           | -               | -               | -                    | -                      | -                  | -                          |
| AF53                         | JPL2-AF53(2)          | 13                       | 2               | 110            | 28           | 0.27 B         | 170          | -               | -               | -                    | -                      | -                  | -                          |
| AF54                         | JPL2-AF54(2)          | 13                       | 0.17 B          | 30             | 18           | 0.58 U         | 77           | -               | -               | -                    | -                      | -                  | -                          |
| AF55                         | JPL2-AF55(2)          | 14                       | 0.38            | 36             | 19           | 0.54 U         | 93           | -               | -               | -                    | -                      | -                  | -                          |
| AF56                         | JPL2-AF56(2)          | 6.2                      | 0.12 B          | 17             | 13           | 0.61 U         | 48           | -               | -               | -                    | -                      | -                  | -                          |
| AF57                         | JPL2-AF57(2)          | 9.3                      | 0.069 B         | 19             | 17           | 0.18 B         | 51           | -               | -               | -                    | -                      | -                  | -                          |
| AF58                         | JPL2-AF58(2)          | 10                       | 0.35            | 31             | 25           | 0.37 B         | 66           | -               | -               | -                    | -                      | -                  | -                          |
| AF63                         | JPL2-AF63(12)         | -                        | -               | -              | -            | 0.21 J         | -            | -               | -               | -                    | -                      | -                  | -                          |
| AP53                         | JPL2-AP53(1)          | 6.4                      | 0.54            | 20             | 14           | 0.52 U         | 70           | -               | -               | -                    | -                      | -                  | -                          |
| AP95                         | JPL2-AP95(0.5)        | -                        | -               | 48             | -            | -              | -            | -               | -               | -                    | -                      | -                  | -                          |
| AP97                         | JPL2-AP97(0.5)        | 13                       | 0.21 U          | 34             | 17           | 0.53 U         | 80           | -               | -               | -                    | -                      | -                  | -                          |
| AP100                        | JPL2-AP100(0.5)       | 8.6                      | 0.52            | 37             | 22           | 0.59 U         | 82           | -               | -               | -                    | -                      | -                  | -                          |
| AP102                        | JPL2-AP102(0.5)       | -                        | -               | 150            | -            | -              | -            | -               | -               | -                    | -                      | -                  | -                          |
| AP103                        | JPL2-AP103(0.5)       | 12                       | 0.24 U          | 31             | 19           | 0.14 B         | 79           | -               | -               | -                    | -                      | -                  | -                          |
| AP105                        | JPL2-AP105(0.5)       | 12                       | 0.18 B          | 31             | 17           | 0.59 U         | 89           | -               | -               | -                    | -                      | -                  | -                          |
| AP106                        | JPL2-AP106(0.5)       | 8.6                      | 0.10 B          | 18             | 13           | 0.59 U         | 44           | -               | -               | -                    | -                      | -                  | -                          |
| AP110                        | JPL2-AP110(0.5)       | 7.6                      | 4.4             | 79             | 39           | 0.24 B         | 150          | -               | -               | -                    | -                      | -                  | -                          |
| AP114                        | JPL2-AP114(0.5)       | 9.5                      | 7               | 190            | 62           | 1.9            | 270          | -               | -               | -                    | -                      | -                  | -                          |
| AP120                        | JPL2-AP120(0.5)       | 8.8                      | 1.6             | 190            | 33           | 1.3            | 240          | -               | -               | -                    | -                      | -                  | -                          |
| AP123                        | JPL2-AP123(0.5)       | 6.2                      | 1.3             | 48             | 18           | 2.1            | 74 B         | -               | -               | -                    | -                      | -                  | -                          |
| AP124                        | JPL2-AP124(0.5)       | 15                       | 1.2             | 55             | 18           | 0.44 J         | 110 B        | -               | -               | -                    | -                      | -                  | -                          |
| AP139                        | JPL2-AP139(1)         | 15                       | -               | 36 B           | 21           | 0.45 J         | 86 B         | -               | -               | -                    | -                      | -                  | -                          |
| AP140                        | JPL2-AP140(8)         | -                        | -               | -              | -            | 0.24 J         | -            | -               | -               | -                    | -                      | -                  | -                          |
| AP141                        | JPL2-AP141(1)         | 9.6                      | -               | 18 B           | 12           | 0.58 U         | 40 B         | -               | -               | -                    | -                      | -                  | -                          |



Table 3-4

**Confirmation Soil Sample Results**  
**Site L2 - Former Popping Furnaces Area**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|                    |                       | Fixed Laboratory Results |                 |                |              |                |              |                 |                 |                      |                        |                    |                            |
|--------------------|-----------------------|--------------------------|-----------------|----------------|--------------|----------------|--------------|-----------------|-----------------|----------------------|------------------------|--------------------|----------------------------|
| Sample Designation | Sample Identification | Arsenic (mg/kg)          | Cadmium (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Silver (mg/kg) | Zinc (mg/kg) | TPH-DRO (mg/kg) | TPH-GRO (mg/kg) | Acenaphthene (µg/kg) | Acenaphthylene (µg/kg) | Anthracene (µg/kg) | Benzo(a)anthracene (µg/kg) |
|                    | LRG                   | 21                       | 63              | 190            | 500          | 16             | 720          | 2,500           | 2,500           | 98,386,000           | NE                     | 491,930,000        | 17,000                     |
|                    | URG                   | 84                       | 220             | 925            | 500          | 9,467          | 2,500        | 2,500           | 2,500           | 98,386,000           | NE                     | 491,930,000        | 17,000                     |
| AP142              | JPL2-AP142(8)         | 10                       | -               | 22 B           | 13           | 0.21 J         | 57 B         | -               | -               | -                    | -                      | -                  | -                          |
| AP143              | JPL2-AP143(1)         | -                        | -               | 22 B           | -            | -              | -            | -               | -               | -                    | -                      | -                  | -                          |
| AP144              | JPL2-AP144(8)         | -                        | -               | 24 B           | -            | -              | -            | -               | -               | -                    | -                      | -                  | -                          |
| AP145              | JPL2-AP145(1)         | -                        | -               | 27 B           | -            | -              | -            | -               | -               | -                    | -                      | -                  | -                          |
| AP146              | JPL2-AP146(8)         | 7.9                      | -               | -              | -            | -              | -            | -               | -               | -                    | -                      | -                  | -                          |
| AP147              | JPL2-AP147(0.5)       | -                        | -               | 29             | -            | -              | 72 B         | -               | -               | -                    | -                      | -                  | -                          |
| AP148              | JPL2-AP148(0.5)       | -                        | -               | 27             | -            | -              | 79 B         | -               | -               | -                    | -                      | -                  | -                          |
| PF4                | JPL2-PF4(4)           | 15                       | 0.36            | 24             | 17           | 0.23 J         | 65 B         | -               | -               | -                    | -                      | -                  | -                          |
| PF5                | JPL2-PF5(4)           | 11                       | 0.68            | 100            | 29           | 0.44 J         | 160 B        | 1,200           | 0.1             | 300                  | 41 U                   | 290                | 26 J                       |
| PF6                | JPL2-PF6(6)           | 17                       | 0.52            | 32             | 15           | 0.51 U         | 110 B        | 490             | 10              | 120                  | 34 U                   | 70                 | 34 U                       |
| SP6                | JPL2-SP6(0)           | 4.2                      | 1.7             | 46             | 20           | 0.24 B         | 70           | -               | -               | -                    | -                      | -                  | -                          |
| SP7                | JPL2-SP7(0)           | 7.3                      | 2.3             | 120            | 26           | 1.1            | 120          | -               | -               | -                    | -                      | -                  | -                          |
| SP10               | JPL2-SP10(1)          | -                        | -               | 14             | 14           | -              | -            | -               | -               | -                    | -                      | -                  | -                          |
| SP11               | JPL2-SP11(1)          | -                        | -               | 30             | 22           | -              | -            | -               | -               | -                    | -                      | -                  | -                          |
| SP17               | JPL2-SP17(1)          | -                        | -               | 16 B           | 17           | 0.24 J         | 55 B         | -               | -               | -                    | -                      | -                  | -                          |
| SP18               | JPL2-SP18(1)          | -                        | -               | 14 B           | 14           | 0.18 J         | 46B          | -               | -               | -                    | -                      | -                  | -                          |
| SP19               | JPL2-SP19(1)          | -                        | -               | 28 B           | 15           | 0.14 J         | 60 B         | -               | -               | -                    | -                      | -                  | -                          |
| SP20               | JPL2-SP20(1)          | -                        | -               | 27 B           | 16           | 0.16 J         | 58           | -               | -               | -                    | -                      | -                  | -                          |
| TF3                | JPL2-TF3(5)           | -                        | -               | -              | -            | -              | -            | 16              | 0.057 U         | 37 U                 | 37 U                   | 37 U               | 12 J                       |
| TF4                | JPL2-TF4(7)           | -                        | -               | -              | -            | -              | -            | 900             | 49              | 56                   | 38 U                   | 38 U               | 38 U                       |
| TP4                | JPL2-TP4(1)           | -                        | -               | -              | -            | -              | -            | 360             | 0.053 U         | 350 U                | 350 U                  | 350 U              | 350 U                      |
| TP5                | JPL2-TP5(1)           | -                        | -               | -              | -            | -              | -            | 62              | 0.051 U         | 340 U                | 340 U                  | 340 U              | 86 J                       |
| TP6                | JPL2-TP6(1)           | -                        | -               | -              | -            | -              | -            | 28              | 0.057 U         | 36 U                 | 36 U                   | 36 U               | 14 J                       |



Table 3-4

Confirmation Soil Sample Results  
 Site L2 - Former Popping Furnaces Area  
 Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
 Phase 2 Remedial Action  
 Joliet Army Ammunition Plant  
 Wilmington, Illinois

|                              |                       | Fixed Laboratory Results |                              |                              |                              |                  |                                |                      |                  |                                |                     |                      |                |
|------------------------------|-----------------------|--------------------------|------------------------------|------------------------------|------------------------------|------------------|--------------------------------|----------------------|------------------|--------------------------------|---------------------|----------------------|----------------|
| Sample Designation           | Sample Identification | Benzo(a)pyrene (µg/kg)   | Benzo(b)fluoranthene (µg/kg) | Benzo(g,h,i)perylene (µg/kg) | Benzo(k)fluoranthene (µg/kg) | Chrysene (µg/kg) | Dibenzo(a,h)anthracene (µg/kg) | Fluoranthene (µg/kg) | Fluorene (µg/kg) | Indeno(1,2,3-cd)pyrene (µg/kg) | Naphthalene (µg/kg) | Phenanthrene (µg/kg) | Pyrene (µg/kg) |
|                              | LRG                   | 2,000                    | 17,000                       | NE                           | 171,000                      | 1,708,000        | 1,700                          | 65,591,000           | 65,591,000       | 17,000                         | 32,793,000          | NE                   | 49,193,000     |
|                              | URG                   | 2,000                    | 17,000                       | NE                           | 171,000                      | 1,708,000        | 1,700                          | 65,591,000           | 65,591,000       | 17,000                         | 32,793,000          | NE                   | 49,193,000     |
| Former Popping Furnaces Area |                       |                          |                              |                              |                              |                  |                                |                      |                  |                                |                     |                      |                |
| AF34                         | JPL2-AF34(2)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AF35                         | JPL2-AF35(2)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AF36                         | JPL2-AF36(2)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AF44                         | JPL2-AF44(2)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AF47                         | JPL2-AF47(2)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AF48                         | JPL2-AF48(2)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AF49                         | JPL2-AF49(2)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AF50                         | JPL2-AF50(3)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AF51                         | JPL2-AF51(3)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AF52                         | JPL2-AF52(2)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AF53                         | JPL2-AF53(2)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AF54                         | JPL2-AF54(2)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AF55                         | JPL2-AF55(2)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AF56                         | JPL2-AF56(2)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AF57                         | JPL2-AF57(2)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AF58                         | JPL2-AF58(2)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AF63                         | JPL2-AF63(12)         | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP53                         | JPL2-AP53(1)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP95                         | JPL2-AP95(0.5)        | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP97                         | JPL2-AP97(0.5)        | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP100                        | JPL2-AP100(0.5)       | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP102                        | JPL2-AP102(0.5)       | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP103                        | JPL2-AP103(0.5)       | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP105                        | JPL2-AP105(0.5)       | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP106                        | JPL2-AP106(0.5)       | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP110                        | JPL2-AP110(0.5)       | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP114                        | JPL2-AP114(0.5)       | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP120                        | JPL2-AP120(0.5)       | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP123                        | JPL2-AP123(0.5)       | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP124                        | JPL2-AP124(0.5)       | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP139                        | JPL2-AP139(1)         | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP140                        | JPL2-AP140(8)         | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP141                        | JPL2-AP141(1)         | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |



Table 3-4

**Confirmation Soil Sample Results**  
**Site L2 - Former Popping Furnaces Area**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|                    |                       | Fixed Laboratory Results |                              |                              |                              |                  |                                |                      |                  |                                |                     |                      |                |
|--------------------|-----------------------|--------------------------|------------------------------|------------------------------|------------------------------|------------------|--------------------------------|----------------------|------------------|--------------------------------|---------------------|----------------------|----------------|
| Sample Designation | Sample Identification | Benzo(a)pyrene (µg/kg)   | Benzo(b)fluoranthene (µg/kg) | Benzo(g,h,i)perylene (µg/kg) | Benzo(k)fluoranthene (µg/kg) | Chrysene (µg/kg) | Dibenzo(a,b)anthracene (µg/kg) | Fluoranthene (µg/kg) | Fluorene (µg/kg) | Indeno(1,2,3-cd)pyrene (µg/kg) | Naphthalene (µg/kg) | Phenanthrene (µg/kg) | Pyrene (µg/kg) |
|                    | LRG                   | 2,000                    | 17,000                       | NE                           | 171,000                      | 1,708,000        | 1,700                          | 65,591,000           | 65,591,000       | 17,000                         | 32,793,000          | NE                   | 49,193,000     |
|                    | URG                   | 2,000                    | 17,000                       | NE                           | 171,000                      | 1,708,000        | 1,700                          | 65,591,000           | 65,591,000       | 17,000                         | 32,793,000          | NE                   | 49,193,000     |
| AP142              | JPL2-AP142(8)         | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP143              | JPL2-AP143(1)         | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP144              | JPL2-AP144(8)         | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP145              | JPL2-AP145(1)         | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP146              | JPL2-AP146(8)         | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP147              | JPL2-AP147(0.5)       | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| AP148              | JPL2-AP148(0.5)       | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| PF4                | JPL2-PF4(4)           | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| PF5                | JPL2-PF5(4)           | 20 J                     | 41 U                         | 41 U                         | 41 U                         | 39 J             | 41 U                           | 170                  | 770              | 41 U                           | 41 U                | 580                  | 320            |
| PF6                | JPL2-PF6(6)           | 34 U                     | 34 U                         | 34 U                         | 34 U                         | 34 U             | 34 U                           | 34 U                 | 270              | 34 U                           | 34 U                | 400                  | 39             |
| SP6                | JPL2-SP6(0)           | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| SP7                | JPL2-SP7(0)           | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| SP10               | JPL2-SP10(1)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| SP11               | JPL2-SP11(1)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| SP17               | JPL2-SP17(1)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| SP18               | JPL2-SP18(1)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| SP19               | JPL2-SP19(1)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| SP20               | JPL2-SP20(1)          | -                        | -                            | -                            | -                            | -                | -                              | -                    | -                | -                              | -                   | -                    | -              |
| TF3                | JPL2-TF3(5)           | 23 J                     | 24 J                         | 33 J                         | 21 J                         | 14 J             | 37 U                           | 37 U                 | 37 U             | 37 U                           | 37 U                | 37 U                 | 37 U           |
| TF4                | JPL2-TF4(7)           | 38 U                     | 38 U                         | 16 J                         | 38 U                         | 38 U             | 38 U                           | 38 U                 | 210              | 38 U                           | 720                 | 430                  | 13 J           |
| TP4                | JPL2-TP4(1)           | 350 U                    | 350 U                        | 160 J                        | 350 U                        | 350 U            | 350 U                          | 350 U                | 350 U            | 350 U                          | 350 U               | 350 U                | 350 U          |
| TP5                | JPL2-TP5(1)           | 150 J                    | 120 J                        | 450                          | 180 J                        | 130 J            | 340 U                          | 140 J                | 340 U            | 340 U                          | 340 U               | 340 U                | 140 J          |
| TP6                | JPL2-TP6(1)           | 22 J                     | 23 J                         | 22 J                         | 26 J                         | 20 J             | 36 U                           | 36 U                 | 36 U             | 36 U                           | 36 U                | 36 U                 | 36 U           |

**Notes:**

- = not analyzed  
DRO = diesel-range organics  
GRO = gasoline-range organics  
LRG = lower remediation goal  
µg/kg = micrograms per kilogram  
mg/kg = milligrams per kilogram  
NE = not established  
TPH = total petroleum hydrocarbons  
URG = upper remediation goal

**Qualifiers:**

B = The compound was also detected in the method blank.  
J = Indicates an estimated value.  
U = Indicates that the compound or analyte was analyzed for, but not detected at or above the stated limit.



**Table 3-5**

**Confirmation Soil Sample Results  
Site L5 - Building 26-2  
Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
Phase 2 Remedial Action  
Joliet Army Ammunition Plant  
Wilmington, Illinois**

|                    |                       | Fixed Laboratory Results |              |              |
|--------------------|-----------------------|--------------------------|--------------|--------------|
| Sample Designation | Sample Identification | Copper (mg/kg)           | Lead (mg/kg) | Zinc (mg/kg) |
| LRG                |                       | 190                      | 500          | 720          |
| URG                |                       | 925                      | 500          | 2,500        |
| AP1                | JPL5-AP1(0.5)         | 190                      | 110          | 330 B        |
| AP2                | JPL5-AP2(0.5)         | 40                       | 16           | 84 B         |
| AP3                | JPL5-AP3(0.5)         | 28                       | 16           | 60 B         |
| AP4                | JPL5-AP4(0.5)         | 35                       | 24           | 98 B         |
| AF1                | JPL5-AF1(1)           | 31                       | 18           | 73 B         |
| AF2                | JPL5-AF2(1)           | 30                       | 16           | 79 B         |
| AF3                | JPL5-AF3(1)           | 20                       | 15           | 61 B         |

Notes:

LRG = lower remediation goal

mg/kg = milligrams per kilogram

URG = upper remediation goal

Qualifiers:

B = The compound was also detected in the method blank.



Table 3-6

**Confirmation Soil Sample Results**  
**Site L5 - Buildings 26-3 and 26-4**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

| Sample Designation | Sample Identification | Fixed Laboratory Results |                           |                       |                               |                           |                                 |                                 |                                 |                     |                                   |                         |                     |                                   |                        |                         |                   |
|--------------------|-----------------------|--------------------------|---------------------------|-----------------------|-------------------------------|---------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------|-----------------------------------|-------------------------|---------------------|-----------------------------------|------------------------|-------------------------|-------------------|
|                    |                       | Acenaphthene<br>(µg/kg)  | Acenaphthylene<br>(µg/kg) | Anthracene<br>(µg/kg) | Benzo(a)anthracene<br>(µg/kg) | Benzo(a)pyrene<br>(µg/kg) | Benzo(b)fluoranthene<br>(µg/kg) | Benzo(g,h,i)perylene<br>(µg/kg) | Benzo(k)fluoranthene<br>(µg/kg) | Chrysene<br>(µg/kg) | Dibenzo(a,h)anthracene<br>(µg/kg) | Fluoranthene<br>(µg/kg) | Fluorene<br>(µg/kg) | Indeno(1,2,3-cd)pyrene<br>(µg/kg) | Naphthalene<br>(µg/kg) | Phenanthrene<br>(µg/kg) | Pyrene<br>(µg/kg) |
|                    | LRG                   | 98,386,000               | NE                        | 491,930,000           | 17,000                        | 2,000                     | 17,000                          | NE                              | 171,000                         | 1,708,000           | 1,700                             | 65,591,000              | 65,591,000          | 17,000                            | 32,793,000             | NE                      | 49,193,000        |
|                    | URG                   | 98,386,000               | NE                        | 491,930,000           | 17,000                        | 2,000                     | 17,000                          | NE                              | 171,000                         | 1,708,000           | 1,700                             | 65,591,000              | 65,591,000          | 17,000                            | 32,793,000             | NE                      | 49,193,000        |
| AF1                | JPLS-B(26-3)AF1(1)    | 41 U                     | 41 U                      | 41 U                  | 41 U                          | 41 U                      | 41 U                            | 41 U                            | 41 U                            | 41 U                | 41 U                              | 10 J                    | 41 U                | 41 U                              | 41 U                   | 41 U                    | 9.5 J             |
| AF2                | JPLS-B(26-3)AF2(1)    | 360 U                    | 360 U                     | 360 U                 | 360 U                         | 360 U                     | 360 U                           | 360 U                           | 360 U                           | 360 U               | 360 U                             | 360 U                   | 360 U               | 360 U                             | 360 U                  | 360 U                   | 360 U             |
| AF3                | JPLS-B(26-3)AF3(1)    | 41 U                     | 41 U                      | 41 U                  | 41 U                          | 41 U                      | 41 U                            | 41 U                            | 41 U                            | 41 U                | 41 U                              | 55                      | 41 U                | 41 U                              | 14 J                   | 78                      | 88                |
| AF4                | JPLS-B(26-3)AF4(1)    | 41 U                     | 41 U                      | 41 U                  | 41 U                          | 41 U                      | 41 U                            | 41 U                            | 41 U                            | 41 U                | 41 U                              | 24 J                    | 41 U                | 41 U                              | 41 U                   | 11 J                    | 16 J              |
| AF5                | JPLS-B(26-3)AF5(1)    | 40 U                     | 40 U                      | 40 U                  | 40 U                          | 40 U                      | 40 U                            | 40 U                            | 40 U                            | 14 J                | 40 U                              | 25 J                    | 40 U                | 40 U                              | 40 U                   | 9.7 J                   | 15 J              |
| AF6                | JPLS-B(26-3)AF6(1)    | 34 U                     | 34 U                      | 34 U                  | 34 U                          | 34 U                      | 34 U                            | 34 U                            | 34 U                            | 34 U                | 34 U                              | 34 U                    | 34 U                | 34 U                              | 34 U                   | 34 U                    | 34 U              |
| AF7                | JPLS-B(26-3)AF7(1)    | 42 U                     | 42 U                      | 42 U                  | 42 U                          | 42 U                      | 42 U                            | 42 U                            | 42 U                            | 42 U                | 42 U                              | 42 U                    | 42 U                | 42 U                              | 42 U                   | 42 U                    | 42 U              |
| AF8                | JPLS-B(26-3)AF8(1)    | 42 U                     | 42 U                      | 42 U                  | 42 U                          | 42 U                      | 42 U                            | 42 U                            | 42 U                            | 13 J                | 42 U                              | 14 J                    | 42 U                | 42 U                              | 42 U                   | 42 U                    | 10 J              |
| AP1                | JPLS-B(26-3)AP1(0.5)  | 340 U                    | 340 U                     | 340 U                 | 110 J                         | 150 J                     | 240 J                           | 270 J                           | 170 J                           | 260 J               | 340 U                             | 530                     | 340 U               | 220 J                             | 340 U                  | 450                     | 510               |
| AP2                | JPLS-B(26-3)AP2(0.5)  | 360 U                    | 360 U                     | 360 U                 | 360 U                         | 360 U                     | 360 U                           | 360 U                           | 360 U                           | 360 U               | 360 U                             | 360 U                   | 360 U               | 360 U                             | 360 U                  | 360 U                   | 360 U             |
| AP3                | JPLS-B(26-3)AP3(0.5)  | 390 U                    | 390 U                     | 390 U                 | 390 U                         | 390 U                     | 390 U                           | 390 U                           | 390 U                           | 390 U               | 390 U                             | 390 U                   | 390 U               | 390 U                             | 390 U                  | 390 U                   | 390 U             |
| AP4                | JPLS-B(26-3)AP4(0.5)  | 41 U                     | 41 U                      | 41 U                  | 19 J                          | 27 J                      | 50                              | 29 J                            | 19 J                            | 32 J                | 41 U                              | 43                      | 41 U                | 31 J                              | 9.0 J                  | 19 J                    | 40 J              |
| AP5                | JPLS-B(26-3)AP5(0.5)  | 37 U                     | 37 U                      | 37 U                  | 37 U                          | 37 U                      | 37 U                            | 37 U                            | 37 U                            | 37 U                | 37 U                              | 37 U                    | 37 U                | 37 U                              | 37 U                   | 37 U                    | 37 U              |

**Notes:**

LRG = lower remediation goal  
µg/kg = micrograms per kilogram  
NE = not established  
URG = upper remediation goal

**Qualifiers:**

J = Indicates an estimated value.  
U = Indicates that the compound or analyte was analyzed for, but not detected at or above the stated limit.



Table 3-7

**Confirmation Soil Sample Results**  
**Site L5 - Ditch**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|                    |                       | Fixed Laboratory Results |                 |                 |                |              |                |                  |              |                 |                 |
|--------------------|-----------------------|--------------------------|-----------------|-----------------|----------------|--------------|----------------|------------------|--------------|-----------------|-----------------|
| Sample Designation | Sample Identification | Antimony (mg/kg)         | Arsenic (mg/kg) | Cadmium (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Silver (mg/kg) | Thallium (mg/kg) | Zinc (mg/kg) | TPH-DRO (mg/kg) | TPH-GRO (mg/kg) |
|                    | LRG                   | 50                       | 21              | 63              | 190            | 500          | 16             | 0.64             | 720          | 2,500           | 2,500           |
|                    | URG                   | 757                      | 84              | 220             | 925            | 500          | 9467           | 86               | 2500         | 2,500           | 2,500           |
| AF9                | JPL5-AF9(3)           | 0.77 J                   | 12              | 0.62            | 25             | 16           | 0.54 U         | 1.1              | 79 B         | 2.8 J           | 0.054 U         |
| AF10               | JPL5-AF10(3)          | 2.2 U                    | 9.2             | 1.5             | 29             | 15           | 0.18 J         | 0.91 J           | 64 B         | 3.5 J           | 0.058 U         |
| AF11               | JPL5-AF11(3)          | 1.8 U                    | 9.8             | 0.24            | 19             | 11           | 0.44 U         | 1.1              | 44 B         | 1.8 J           | 0.052 U         |
| AF12               | JPL5-AF12(3)          | 0.77 J                   | 10              | 0.37            | 25             | 12           | 0.48 U         | 1.6              | 61 B         | 6.5             | 0.052 U         |
| AF13               | JPL5-AF13(3)          | 0.59 J                   | 5.2             | 0.41            | 36             | 14           | 0.49 U         | 0.46 U           | 69 B         | 2.3 J           | 0.054 U         |
| AF14               | JPL5-AF14(3)          | 2.0 U                    | 12              | 0.39            | 24             | 16           | 0.51 U         | 1.5              | 52 B         | 6.9             | 0.054 U         |
| AF15               | JPL5-AF15(3)          | 0.93 J                   | 11              | 0.46            | 25             | 17           | 0.52 U         | 0.52 J           | 66 B         | 6.4             | 0.054 U         |
| AF16               | JPL5-AF16(3)          | 2.2 U                    | 11              | 0.27            | 22             | 14           | 0.54 U         | 0.51 U           | 62 B         | 2.8 J           | 0.057 U         |
| AF17               | JPL5-AF17(3)          | 2.0 U                    | 8.8             | 0.24            | 21             | 19           | 0.51 U         | 1.4              | 66 B         | 9.7             | 0.056 U         |
| AF18               | JPL5-AF18(3)          | 0.88 J                   | 5.8             | 0.25            | 19             | 13           | 0.49 U         | 0.46 U           | 53 B         | 8.2             | 0.056 U         |
| AF19               | JPL5-AF19(3)          | 1.9 U                    | 22              | 0.47            | 23             | 46           | 0.49 U         | 1.1              | 60 B         | 6.4             | 0.053 U         |
| AF25               | JPL5-AF25(4)          | --                       | 17              | --              | --             | --           | --             | --               | --           | --              | --              |
| AF26               | JPL5-AF26(4)          | --                       | 4.2             | --              | --             | --           | --             | --               | --           | --              | --              |
| AF30               | JPL5-AF30(6)          | --                       | 9.3             | --              | --             | --           | --             | --               | --           | --              | --              |
| AF31               | JPL5-AF31(3)          | --                       | --              | --              | 30             | --           | --             | --               | 71 B         | --              | --              |
| AF32               | JPL5-AF32(4)          | --                       | --              | --              | 67 B           | --           | --             | --               | 230 B        | --              | --              |
| AP10               | JPL5-AP10(0.5)        | 1.5 J                    | 14              | 3.6             | 63             | 59           | 0.40 J         | 0.90 J           | 380 B        | 31              | 0.058 U         |
| AP11               | JPL5-AP11(0.5)        | 0.82 J                   | 6.1             | 1.3             | 20             | 29           | 0.45 U         | 0.67 J           | 78 B         | 22              | 0.051 U         |
| AP12               | JPL5-AP12(0.5)        | 2.1 U                    | 9.9             | 0.46            | 27             | 18           | 0.52 U         | 0.99 J           | 60 B         | 7.6             | 0.055 U         |
| AP13               | JPL5-AP13(0.5)        | 2.2 U                    | 9.9             | 0.58            | 23             | 20           | 0.56 U         | 0.74 J           | 64 B         | 9.0             | 0.058 U         |
| AP14               | JPL5-AP14(0.5)        | 1.0 J                    | 5.7             | 0.87            | 28             | 16           | 0.54 U         | 0.51 U           | 68 B         | 18              | 0.056 U         |
| AP16               | JPL5-AP16(0.5)        | 2.0 U                    | 5.6             | 0.36            | 21             | 13           | 0.50 U         | 0.50 J           | 59 B         | 8.5             | 0.056 U         |
| AP17               | JPL5-AP17(0.5)        | 1.0 J                    | 8.9             | 0.21 J          | 20             | 14           | 0.58 U         | 0.55 U           | 51 B         | 8.5             | 0.062 U         |
| AP18               | JPL5-AP18(0.5)        | 2.2 U                    | 7.3             | 0.20 J          | 16             | 16           | 0.54 U         | 1.0 J            | 52 B         | 22              | 0.055 U         |



Table 3-7

**Confirmation Soil Sample Results**  
**Site L5 - Ditch**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|                    |                       | Fixed Laboratory Results |                 |                 |                |              |                |                  |              |                 |                 |
|--------------------|-----------------------|--------------------------|-----------------|-----------------|----------------|--------------|----------------|------------------|--------------|-----------------|-----------------|
| Sample Designation | Sample Identification | Antimony (mg/kg)         | Arsenic (mg/kg) | Cadmium (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Silver (mg/kg) | Thallium (mg/kg) | Zinc (mg/kg) | TPH-DRO (mg/kg) | TPH-GRO (mg/kg) |
| LRG                |                       | 50                       | 21              | 63              | 190            | 500          | 16             | 0.64             | 720          | 2,500           | 2,500           |
| URG                |                       | 757                      | 84              | 220             | 925            | 500          | 9467           | 86               | 2500         | 2,500           | 2,500           |
| AP19               | JPL5-AP19(0.5)        | 2.2 U                    | 10              | 0.22 U          | 14             | 13           | 0.54 U         | 0.61 J           | 45 B         | 7.3             | 0.056 U         |
| AP20               | JPL5-AP20(0.5)        | 2.0 U                    | 9.5             | 0.10 J          | 19             | 16           | 0.49 U         | 1.6              | 50 B         | 13              | 0.054 U         |
| AP21               | JPL5-AP21(0.5)        | 2.1 U                    | 8.3             | 0.086 J         | 18             | 16           | 0.52 U         | 1.3              | 51 B         | 6.9             | 0.055 U         |
| AP22               | JPL5-AP22(0.5)        | 2.4 U                    | 8.3             | 0.32            | 17             | 21           | 0.60 U         | 1.0 J            | 61 B         | 24              | 0.062 U         |
| AP23               | JPL5-AP23(0.5)        | 2.0 U                    | 6.7             | 0.11 J          | 15             | 13           | 0.50 U         | 0.76 J           | 47 B         | 85              | 0.054 U         |
| AP24               | JPL5-AP24(0.5)        | 2.1 U                    | 7.4             | 0.20 J          | 16             | 16           | 0.51 U         | 1.4              | 49 B         | 11              | 0.053 U         |
| AP25               | JPL5-AP25(0.5)        | 1.9 U                    | 7.7             | 0.16 J          | 18             | 18           | 0.48 U         | 1.4              | 48 B         | 10              | 0.056 U         |
| AP26               | JPL5-AP26(0.5)        | 2.2 U                    | 9.3             | 0.10 J          | 17             | 16           | 0.54 U         | 0.69 J           | 47 B         | 9.8             | 0.055 U         |
| AP27               | JPL5-AP27(0.5)        | 2.2 U                    | 6.1             | 0.22 U          | 14             | 13           | 0.54 U         | 0.92 J           | 44 B         | 8.9             | 0.056 U         |
| AP28               | JPL5-AP28(0.5)        | 2.2 U                    | 6.2             | 1.3             | 20             | 22           | 0.56 U         | 1.3              | 66 B         | 20              | 0.056 U         |
| AP29               | JPL5-AP29(0.5)        | 2.3 U                    | 9.0             | 0.63            | 23             | 24           | 0.57 U         | 0.76 J           | 71 B         | 22              | 0.059 U         |
| AP30               | JPL5-AP30(0.5)        | 2.5 U                    | 6.2             | 0.48            | 26             | 16           | 0.64 U         | 0.60 U           | 64 B         | 13              | 0.068 U         |
| AP31               | JPL5-AP31(0.5)        | 2.2 U                    | 5.8             | 0.18 J          | 16             | 14           | 0.56 U         | 0.74 J           | 38 B         | 12              | 0.056 U         |
| AP32               | JPL5-AP32(0.5)        | 2.1 U                    | 5.1             | 0.44            | 22             | 14           | 0.52 U         | 0.73 J           | 59 B         | 22              | 0.057 U         |
| AP33               | JPL5-AP33(0.5)        | 2.0 U                    | 7.5             | 0.25            | 16             | 16           | 0.51 U         | 1.3              | 49 B         | 7.8             | 0.054 U         |
| AP34               | JPL5-AP34(0.5)        | 0.68 J                   | 6.6             | 0.21            | 13             | 15           | 0.51 U         | 1                | 46 B         | 8.4             | 0.053 U         |
| AP35               | JPL5-AP35(0.5)        | 2.0 U                    | 8.0             | 0.22            | 17             | 16           | 0.50 U         | 1.3              | 50 B         | 10              | 0.059 U         |
| AP36               | JPL5-AP36(0.5)        | 1.0 J                    | 6.7             | 0.78            | 24             | 22           | 0.53 U         | 0.56 J           | 81 B         | 17              | 0.058 U         |
| AP41               | JPL5-AP41(0.5)        | --                       | 11              | --              | --             | --           | --             | --               | --           | --              | --              |
| AP43               | JPL5-AP43(0.5)        | 2                        | 9.7             | 1.8             | 58 B           | 64           | 0.18 J         | 0.42 U           | 140 B        | 35              | 0.052 U         |
| AP48               | JPL5-AP48(0.5)        | --                       | 8.0             | --              | 17 B           | 19           | --             | -                | 52 B         | --              | --              |
| AP50               | JPL5-AP50(0.5)        | --                       | --              | --              | 25 B           | 16           | --             | --               | 64 B         | --              | --              |
| AP51               | JPL5-AP51(0.5)        | --                       | --              | --              | 52             | --           | --             | --               | --           | --              | --              |
| AP52               | JPL5-AP52(0.5)        | --                       | 8.9             | --              | --             | --           | --             | --               | --           | --              | --              |



Table 3-7

**Confirmation Soil Sample Results  
Site L5 - Ditch  
Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
Phase 2 Remedial Action  
Joliet Army Ammunition Plant  
Wilmington, Illinois**

| Sample Designation | Sample Identification | Fixed Laboratory Results |                 |                 |                |              |                |                  |              |                 |                 |
|--------------------|-----------------------|--------------------------|-----------------|-----------------|----------------|--------------|----------------|------------------|--------------|-----------------|-----------------|
|                    |                       | Antimony (mg/kg)         | Arsenic (mg/kg) | Cadmium (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Silver (mg/kg) | Thallium (mg/kg) | Zinc (mg/kg) | TPH-DRO (mg/kg) | TPH-GRO (mg/kg) |
|                    | LRG                   | 50                       | 21              | 63              | 190            | 500          | 16             | 0.64             | 720          | 2,500           | 2,500           |
|                    | URG                   | 757                      | 84              | 220             | 925            | 500          | 9467           | 86               | 2500         | 2,500           | 2,500           |
| SP1                | JPL5-SP1(1)           | 1.0 J                    | 10              | 0.56            | 22             | 28           | 0.14 J         | 0.62 U           | 78 B         | 36              | 0.073 U         |
| SP2                | JPL5-SP2(1)           | 0.75 J                   | 9.3             | 0.44            | 18             | 29           | 0.13 J         | 0.61 U           | 130 B        | 44              | 0.072 U         |
| SP3                | JPL5-SP3(1)           | 2.6 U                    | 12              | 2.8             | 74             | 58           | 0.66 U         | 0.62 U           | 350 B        | 43              | 0.073 U         |
| SP4                | JPL5-SP4(1)           | 0.96 J                   | 20              | 1.6             | 33             | 41           | 0.34 J         | 0.55 U           | 130 B        | 28              | 0.070 U         |
| SP5                | JPL5-SP5(1)           | 2.5 U                    | 10              | 0.71            | 26             | 20           | 0.63 U         | 0.59 U           | 80 B         | 27              | 0.069 U         |
| SP6                | JPL5-SP6(1)           | 2.3 U                    | 13              | 0.57            | 27             | 22           | 0.25 J         | 0.54 U           | 67 B         | 13              | 0.065 U         |

Notes:

-- = not analyzed

**Result** = Result is greater than the LRG

**Result** = Result reported to the method detection limit

DRO = diesel-range organics

GRO = gasoline-range organics

LRG = lower remediation goal

mg/kg = milligrams per kilogram

TPH = total petroleum hydrocarbons

URG = upper remediation goal

Qualifiers:

B = The compound was also detected in the method blank.

J = Indicates an estimated value.

U = Indicates that the compound or analyte was analyzed for, but not detected at or above the stated limit.



**Table 3-8**

**Composite Soil Sample Results  
Site L5 - PCB Excavation  
Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
Phase 2 Remedial Action  
Joliet Army Ammunition Plant  
Wilmington, Illinois**

|                    |                       | Fixed Laboratory Results |                     |                     |                     |                     |                     |                     |                 |
|--------------------|-----------------------|--------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-----------------|
| Sample Designation | Sample Identification | PCB-1016<br>(µg/kg)      | PCB-1221<br>(µg/kg) | PCB-1232<br>(µg/kg) | PCB-1242<br>(µg/kg) | PCB-1248<br>(µg/kg) | PCB-1254<br>(µg/kg) | PCB-1260<br>(µg/kg) | Lead<br>(mg/kg) |
| LRG                |                       | 1,000                    | 1,000               | 1,000               | 1,000               | 1,000               | 1,000               | 1,000               | 500             |
| URG                |                       | 1,000                    | 1,000               | 1,000               | 1,000               | 1,000               | 1,000               | 1,000               | 500             |
| 1                  | JPL5-1(3)             | 19 U                     | 19 U                | 19 U                | 19 U                | 19 U                | 19 U                | 14 J                | 15 B            |
| 2                  | JPL5-2(3)             | 19 U                     | 19 U                | 19 U                | 19 U                | 19 U                | 19 U                | 42                  | 12 B            |
| 3                  | JPL5-3(3)             | 19 U                     | 19 U                | 19 U                | 19 U                | 19 U                | 19 U                | 68                  | 13 B            |
| 4                  | JPL5-4(3)             | 19 U                     | 19 U                | 19 U                | 19 U                | 19 U                | 19 U                | 21                  | 15 B            |
| 5                  | JPL5-5(3)             | 19 U                     | 19 U                | 19 U                | 19 U                | 19 U                | 19 U                | 24                  | 13 B            |
| 6                  | JPL5-6(3)             | 19 U                     | 19 U                | 19 U                | 19 U                | 19 U                | 19 U                | 33                  | 14 B            |
| 7                  | JPL5-7(3)             | 19 U                     | 19 U                | 19 U                | 19 U                | 19 U                | 19 U                | 280                 | 14 B            |
| 8                  | JPL5-8(3)             | 20 U                     | 20 U                | 20 U                | 20 U                | 20 U                | 20 U                | 110                 | 21 B            |
| 9                  | JPL5-9(3)             | 20 U                     | 20 U                | 20 U                | 20 U                | 20 U                | 20 U                | 50                  | 16 B            |
| 10                 | JPL5-10(3)            | 18 U                     | 18 U                | 18 U                | 18 U                | 18 U                | 18 U                | 130                 | 17 B            |
| 11                 | JPL5-11(3)            | 19 U                     | 19 U                | 19 U                | 19 U                | 19 U                | 19 U                | 18 J                | 18 B            |
| 12                 | JPL5-12(3)            | 19 U                     | 19 U                | 19 U                | 19 U                | 19 U                | 19 U                | 19                  | 22 B            |
| 14                 | JPL5-14(3)            | 19 U                     | 19 U                | 19 U                | 19 U                | 19 U                | 19 U                | 50                  | 14 B            |
| 15                 | JPL5-15(0)            | 92 U                     | 92 U                | 92 U                | 92 U                | 92 U                | 92 U                | 500                 | 72 B            |

Notes:

LRG = lower remediation goal  
µg/kg = micrograms per kilogram  
mg/kg = milligrams per kilogram  
PCB = polychlorinated biphenyl  
URG = upper remediation goal

Qualifiers:

B = The compound was also detected in the method blank.  
J = Indicates an estimated value.  
U = Indicates that the compound or analyte was analyzed for, but not detected above the stated limit.



Table 3-9

**Composite and Confirmation Soil Sample Results**  
**Site L5 - PCN Excavation**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

| Sample Designation | Sample Identification | XRF Unit Results | Fixed Laboratory Results      |                             |                              |                                |                                |                               |                                |                               |                  |                  |                  |                  |                  |                  |                  |                 |                |              |                  |              |
|--------------------|-----------------------|------------------|-------------------------------|-----------------------------|------------------------------|--------------------------------|--------------------------------|-------------------------------|--------------------------------|-------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------|----------------|--------------|------------------|--------------|
|                    |                       | Lead (mg/kg)     | Monochloronaphthalene (µg/kg) | Dichloronaphthalene (µg/kg) | Trichloronaphthalene (µg/kg) | Tetrachloronaphthalene (µg/kg) | Pentachloronaphthalene (µg/kg) | Hexachloronaphthalene (µg/kg) | Heptachloronaphthalene (µg/kg) | Octachloronaphthalene (µg/kg) | PCB-1016 (µg/kg) | PCB-1221 (µg/kg) | PCB-1232 (µg/kg) | PCB-1242 (µg/kg) | PCB-1248 (µg/kg) | PCB-1254 (µg/kg) | PCB-1260 (µg/kg) | Arsenic (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Thallium (mg/kg) | Zinc (mg/kg) |
|                    | LRG                   | 500              | 1,000                         | 1,000                       | 1,000                        | 1,000                          | 1,000                          | 1,000                         | 1,000                          | 1,000                         | 1,000            | 1,000            | 1,000            | 1,000            | 1,000            | 1,000            | 1,000            | 21              | 190            | 500          | 0.64             | 720          |
|                    | URG                   | 500              | 1,000                         | 1,000                       | 1,000                        | 1,000                          | 1,000                          | 1,000                         | 1,000                          | 1,000                         | 1,000            | 1,000            | 1,000            | 1,000            | 1,000            | 1,000            | 1,000            | 84              | 925            | 500          | 86               | 2,500        |
| PCN2-1             | JPL5-PCN2-1(5)        | --               | 45 U                          | 45 U                        | 45 U                         | 45 U                           | 45 U                           | 45 U                          | 45 U                           | 45 U                          | 22 U             | 22 U             | 22 U             | 22 U             | 22 U             | 22 U             | 22 U             | 14              | 39 B           | 19           | 2.2              | 80 B         |
| PCN2-2             | JPL5-PCN2-2(5)        | --               | 43 U                          | 43 U                        | 43 U                         | 43 U                           | 43 U                           | 43 U                          | 43 U                           | 43 U                          | 21 U             | 21 U             | 21 U             | 21 U             | 21 U             | 21 U             | 21 U             | 9.7             | 26 B           | 13           | 1.4              | 57 B         |
| PCN2-3             | JPL5-PCN2-3(5)        | --               | 42 U                          | 42 U                        | 42 U                         | 42 U                           | 42 U                           | 42 U                          | 42 U                           | 42 U                          | 21 U             | 21 U             | 21 U             | 21 U             | 21 U             | 21 U             | 21 U             | 14              | 27 B           | 15           | 2.8              | 67 B         |
| PCN2-4             | JPL5-PCN2-4(5)        | --               | 43 U                          | 43 U                        | 43 U                         | 43 U                           | 43 U                           | 43 U                          | 43 U                           | 43 U                          | 22 U             | 22 U             | 22 U             | 22 U             | 22 U             | 22 U             | 22 U             | 12              | 28 B           | 14           | 2.0              | 67 B         |
| PCN2-5             | JPL5-PCN2-5(5)        | --               | 46 U                          | 46 U                        | 46 U                         | 46 U                           | 46 U                           | 46 U                          | 46 U                           | 46 U                          | 23 U             | 23 U             | 23 U             | 23 U             | 23 U             | 23 U             | 23 U             | 13              | 32 B           | 16           | 2.3              | 80 B         |
| PCN2-6             | JPL5-PCN2-6(5)        | --               | 44 U                          | 44 U                        | 44 U                         | 44 U                           | 44 U                           | 44 U                          | 44 U                           | 44 U                          | 21 U             | 21 U             | 21 U             | 21 U             | 21 U             | 21 U             | 21 U             | 15              | 28 B           | 16           | 3.1              | 73 B         |
| PCN2-7             | JPL5-PCN2-7(5)        | --               | 43 U                          | 43 U                        | 43 U                         | 43 U                           | 43 U                           | 43 U                          | 43 U                           | 43 U                          | 23 U             | 23 U             | 23 U             | 23 U             | 23 U             | 23 U             | 23 U             | 14              | 31 B           | 15           | 2.8              | 82 B         |
| PCN2-8             | JPL5-PCN2-8(5)        | --               | 46 U                          | 46 U                        | 46 U                         | 46 U                           | 46 U                           | 46 U                          | 46 U                           | 46 U                          | 23 U             | 23 U             | 23 U             | 23 U             | 23 U             | 23 U             | 23 U             | 12              | 31 B           | 15           | 2.5              | 83 B         |
| PCN2-9             | JPL5-PCN2-9(5)        | --               | 45 U                          | 45 U                        | 45 U                         | 45 U                           | 45 U                           | 45 U                          | 45 U                           | 45 U                          | 23 U             | 23 U             | 23 U             | 23 U             | 23 U             | 23 U             | 23 U             | 8.2             | 26 B           | 12           | 2.4              | 62 B         |
| PCN2-10            | JPL5-PCN2-10(5)       | --               | 46 U                          | 46 U                        | 46 U                         | 46 U                           | 46 U                           | 46 U                          | 46 U                           | 46 U                          | 24 U             | 24 U             | 24 U             | 24 U             | 24 U             | 24 U             | 24 U             | 14              | 27 B           | 14           | 2.3              | 72 B         |
| PCN2-11            | JPL5-PCN2-11(5)       | --               | 36 U                          | 36 U                        | 36 U                         | 36 U                           | 36 U                           | 36 U                          | 36 U                           | 36 U                          | --               | --               | --               | --               | --               | --               | --               | --              | --             | 15           | --               | --           |
| PCN2-12            | JPL5-PCN2-12(5)       | --               | 35 U                          | 35 U                        | 35 U                         | 35 U                           | 35 U                           | 35 U                          | 35 U                           | 35 U                          | --               | --               | --               | --               | --               | --               | --               | --              | --             | 12           | --               | --           |
| PCN2-13            | JPL5-PCN2-13(5)       | --               | 36 U                          | 36 U                        | 36 U                         | 36 U                           | 36 U                           | 36 U                          | 36 U                           | 36 U                          | --               | --               | --               | --               | --               | --               | --               | --              | --             | 14           | --               | --           |
| PCN2-14            | JPL5-PCN2-14(5)       | --               | 36 U                          | 36 U                        | 36 U                         | 36 U                           | 36 U                           | 36 U                          | 36 U                           | 36 U                          | --               | --               | --               | --               | --               | --               | --               | --              | --             | 13           | --               | --           |
| PCN2-15            | JPL5-PCN2-15(5)       | --               | 35 U                          | 35 U                        | 35 U                         | 35 U                           | 35 U                           | 35 U                          | 35 U                           | 35 U                          | --               | --               | --               | --               | --               | --               | --               | --              | --             | 12           | --               | --           |
| PCN2-16            | JPL5-PCN2-16(5)       | --               | 36 U                          | 36 U                        | 36 U                         | 36 U                           | 36 U                           | 36 U                          | 36 U                           | 36 U                          | --               | --               | --               | --               | --               | --               | --               | --              | --             | 13           | --               | --           |
| PCN2-17            | JPL5-PCN2-17(5)       | --               | 35 U                          | 35 U                        | 35 U                         | 35 U                           | 35 U                           | 35 U                          | 35 U                           | 35 U                          | --               | --               | --               | --               | --               | --               | --               | --              | --             | 13           | --               | --           |
| PCN2-18            | JPL5-PCN2-18(5)       | --               | 35 U                          | 35 U                        | 35 U                         | 35 U                           | 35 U                           | 35 U                          | 35 U                           | 35 U                          | --               | --               | --               | --               | --               | --               | --               | --              | --             | 14           | --               | --           |
| PCN2-19            | JPL5-PCN2-19(5)       | --               | 36 U                          | 36 U                        | 36 U                         | 36 U                           | 36 U                           | 36 U                          | 36 U                           | 36 U                          | --               | --               | --               | --               | --               | --               | --               | --              | --             | 13           | --               | --           |
| PCN2-20            | JPL5-PCN2-20(5)       | --               | 36 U                          | 36 U                        | 36 U                         | 36 U                           | 36 U                           | 36 U                          | 36 U                           | 36 U                          | --               | --               | --               | --               | --               | --               | --               | --              | --             | 12           | --               | --           |
| PCN2-21            | JPL5-PCN2-21(5)       | --               | 37 U                          | 37 U                        | 37 U                         | 37 U                           | 37 U                           | 37 U                          | 37 U                           | 37 U                          | --               | --               | --               | --               | --               | --               | --               | --              | --             | 15           | --               | --           |
| PCN2-22            | JPL5-PCN2-22(5)       | --               | 36 U                          | 36 U                        | 36 U                         | 36 U                           | 36 U                           | 36 U                          | 36 U                           | 36 U                          | --               | --               | --               | --               | --               | --               | --               | --              | --             | 18           | --               | --           |
| PCN2-23            | JPL5-PCN2-23(5)       | --               | 38 U                          | 38 U                        | 38 U                         | 38 U                           | 38 U                           | 38 U                          | 38 U                           | 38 U                          | --               | --               | --               | --               | --               | --               | --               | --              | --             | 15           | --               | --           |
| PCN2-24            | JPL5-PCN2-24(5)       | --               | 36 U                          | 36 U                        | 130                          | 120                            | 39                             | 36 U                          | 36 U                           | 36 U                          | --               | --               | --               | --               | --               | --               | --               | --              | --             | 18           | --               | --           |
| PCN2-25            | JPL5-PCN2-25(5)       | --               | 36 U                          | 36 U                        | 36 U                         | 36 U                           | 36 U                           | 36 U                          | 36 U                           | 36 U                          | --               | --               | --               | --               | --               | --               | --               | --              | --             | 16           | --               | --           |
| PCN2-26            | JPL5-PCN2-26(5)       | --               | 36 U                          | 18 J                        | 250                          | 220                            | 62                             | 36 U                          | 36 U                           | 36 U                          | --               | --               | --               | --               | --               | --               | --               | --              | --             | 25           | --               | --           |
| PCN2-27            | JPL5-PCN2-27(5)       | --               | 36 U                          | 36 U                        | 36 U                         | 36 U                           | 36 U                           | 36 U                          | 36 U                           | 36 U                          | --               | --               | --               | --               | --               | --               | --               | --              | --             | 18           | --               | --           |
| AF5                | JPL5-AF5(3)           | --               | --                            | --                          | --                           | --                             | --                             | --                            | --                             | --                            | --               | --               | --               | --               | --               | --               | --               | --              | --             | 25           | --               | --           |
| AF6                | JPL5-AF6(3)           | --               | --                            | --                          | --                           | --                             | --                             | --                            | --                             | --                            | --               | --               | --               | --               | --               | --               | --               | --              | --             | 12           | --               | --           |
| AF7                | JPL5-AF7(3)           | --               | --                            | --                          | --                           | --                             | --                             | --                            | --                             | --                            | --               | --               | --               | --               | --               | --               | --               | --              | --             | 14           | --               | --           |
| AF8                | JPL5-AF8(3)           | --               | --                            | --                          | --                           | --                             | --                             | --                            | --                             | --                            | --               | --               | --               | --               | --               | --               | --               | --              | --             | 14           | --               | --           |
| AF22               | JPL5-AF22(2)          | --               | --                            | --                          | --                           | --                             | --                             | --                            | --                             | --                            | --               | --               | --               | --               | --               | --               | --               | --              | --             | 15           | --               | --           |
| AF23               | JPL5-AF23(2)          | --               | --                            | --                          | --                           | --                             | --                             | --                            | --                             | --                            | --               | --               | --               | --               | --               | --               | --               | --              | --             | 14           | --               | --           |



Table 3-9

**Composite and Confirmation Soil Sample Results**  
**Site L5 - PCN Excavation**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|                    |                       | XRF Unit Results |                               | Fixed Laboratory Results    |                              |                                |                                |                               |                                |                               |                  |                  |                  |                  |                  |                  |                  |                 |                |              |                  |              |
|--------------------|-----------------------|------------------|-------------------------------|-----------------------------|------------------------------|--------------------------------|--------------------------------|-------------------------------|--------------------------------|-------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------|----------------|--------------|------------------|--------------|
| Sample Designation | Sample Identification | Lead (mg/kg)     | Monochloronaphthalene (µg/kg) | Dichloronaphthalene (µg/kg) | Trichloronaphthalene (µg/kg) | Tetrachloronaphthalene (µg/kg) | Pentachloronaphthalene (µg/kg) | Hexachloronaphthalene (µg/kg) | Heptachloronaphthalene (µg/kg) | Octachloronaphthalene (µg/kg) | PCB-1016 (µg/kg) | PCB-1221 (µg/kg) | PCB-1232 (µg/kg) | PCB-1242 (µg/kg) | PCB-1248 (µg/kg) | PCB-1254 (µg/kg) | PCB-1260 (µg/kg) | Arsenic (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Thallium (mg/kg) | Zinc (mg/kg) |
|                    | LRG                   | 500              | 1,000                         | 1,000                       | 1,000                        | 1,000                          | 1,000                          | 1,000                         | 1,000                          | 1,000                         | 1,000            | 1,000            | 1,000            | 1,000            | 1,000            | 1,000            | 1,000            | 21              | 190            | 500          | 0.64             | 720          |
|                    | URG                   | 500              | 1,000                         | 1,000                       | 1,000                        | 1,000                          | 1,000                          | 1,000                         | 1,000                          | 1,000                         | 1,000            | 1,000            | 1,000            | 1,000            | 1,000            | 1,000            | 1,000            | 84              | 925            | 500          | 86               | 2,500        |
| AP5                | JPL5-AP5(0.5)         | -                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | -                | -                | -                | -                | -                | -                | -                | -               | -              | 31           | -                | -            |
| AP6                | JPL5-AP6(0.5)         | -                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | -                | -                | -                | -                | -                | -                | -                | -               | -              | 22           | -                | -            |
| AP7                | JPL5-AP7(0.5)         | -                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | -                | -                | -                | -                | -                | -                | -                | -               | -              | 40           | -                | -            |
| AP8                | JPL5-AP8(0.5)         | -                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | -                | -                | -                | -                | -                | -                | -                | -               | -              | 20           | -                | -            |
| AP9                | JPL5-AP9(0.5)         | -                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | -                | -                | -                | -                | -                | -                | -                | -               | -              | 24           | -                | -            |
| AP37               | JPL5-AP37(0.5)        | -                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | -                | -                | -                | -                | -                | -                | -                | -               | -              | 19           | -                | -            |
| AP38               | JPL5-AP38(0.5)        | -                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | -                | -                | -                | -                | -                | -                | -                | -               | -              | 29           | -                | -            |
| AP39               | JPL5-AP39(0.5)        | -                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | -                | -                | -                | -                | -                | -                | -                | -               | -              | 44           | -                | -            |
| AP40               | JPL5-AP40(0.5)        | -                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | -                | -                | -                | -                | -                | -                | -                | -               | -              | 57           | -                | -            |
| C1                 | JPL5-C1(1)            | a                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 680 U            | 560 U            | 540 U            | 590 U            | 440 U            | 450 U            | 400 U            | -               | -              | -            | -                | -            |
| C2                 | JPL5-C2(1)            | a                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 3,300 U          | 2,700 U          | 2,600 U          | 2,900 U          | 2,100 U          | 2,200 U          | 1,900 U          | -               | -              | -            | -                | -            |
| C3                 | JPL5-C3(1)            | a                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 3,200 U          | 2,700 U          | 2,600 U          | 2,800 U          | 2,100 U          | 2,100 U          | 1,900 U          | -               | -              | -            | -                | -            |
| C4                 | JPL5-C4(1)            | 235              | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 410 U            | 410 U            | 410 U            | 410 U            | 410 U            | 410 U            | 410 U            | -               | -              | -            | -                | -            |
| C5                 | JPL5-C5(1)            | 96               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 620 U            | 510 U            | 500 U            | 540 U            | 400 U            | 410 U            | 360 U            | -               | -              | -            | -                | -            |
| D1                 | JPL5-D1(1)            | 30               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 37 U             | 37 U             | 37 U             | 37 U             | 37 U             | 37 U             | 37 U             | -               | -              | -            | -                | -            |
| D2                 | JPL5-D2(1)            | 31               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 20 U             | 20 U             | 20 U             | 20 U             | 20 U             | 20 U             | 20 U             | -               | -              | -            | -                | -            |
| D3                 | JPL5-D3(1)            | 40               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 20 U             | 20 U             | 20 U             | 20 U             | 20 U             | 20 U             | 20 U             | -               | -              | -            | -                | -            |
| D4                 | JPL5-D4(1)            | -                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 92 U             | 92 U             | 92 U             | 92 U             | 92 U             | 92 U             | 92 U             | -               | -              | 400          | -                | -            |
| D5                 | JPL5-D5(1)            | 54               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 19 U             | 19 U             | 19 U             | 19 U             | 19 U             | 19 U             | 19 U             | -               | -              | -            | -                | -            |
| E1                 | JPL5-E1(1)            | 53               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 45 U             | 45 U             | 45 U             | 45 U             | 45 U             | 45 U             | 270              | -               | -              | -            | -                | -            |
| E2                 | JPL5-E2(1)            | 59               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 43 U             | 43 U             | 43 U             | 43 U             | 43 U             | 43 U             | 200              | -               | -              | -            | -                | -            |
| E3                 | JPL5-E3(1)            | 56               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 43 U             | 43 U             | 43 U             | 43 U             | 43 U             | 43 U             | 160              | -               | -              | -            | -                | -            |
| E4                 | JPL5-E4(1)            | 247              | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 210 U            | 210 U            | 210 U            | 210 U            | 210 U            | 210 U            | 200 U            | -               | -              | -            | -                | -            |
| E5                 | JPL5-E5(1)            | 166              | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 680 U            | 560 U            | 550 U            | 600 U            | 440 U            | 450 U            | 400 U            | -               | -              | -            | -                | -            |
| F1                 | JPL5-F1(1)            | 27               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 21 U             | 21 U             | 21 U             | 21 U             | 21 U             | 21 U             | 60               | -               | -              | -            | -                | -            |
| F2                 | JPL5-F2(1)            | 27               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 20 U             | 20 U             | 20 U             | 20 U             | 20 U             | 20 U             | 120              | -               | -              | -            | -                | -            |
| F3                 | JPL5-F3(1)            | 29               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 40 U             | 40 U             | 40 U             | 40 U             | 40 U             | 40 U             | 89               | -               | -              | -            | -                | -            |
| F4                 | JPL5-F4(1)            | 29               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 40 U             | 40 U             | 40 U             | 40 U             | 40 U             | 40 U             | 55               | -               | -              | -            | -                | -            |
| F5                 | JPL5-F5(1)            | 24               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 200 U            | 200 U            | 200 U            | 200 U            | 200 U            | 200 U            | 200 U            | -               | -              | -            | -                | -            |
| G1                 | JPL5-G1(1)            | -                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 20 U             | 20 U             | 20 U             | 20 U             | 20 U             | 20 U             | 28               | -               | -              | 17           | -                | -            |
| G2                 | JPL5-G2(1)            | -                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 20 U             | 20 U             | 20 U             | 20 U             | 20 U             | 20 U             | 22               | -               | -              | 17           | -                | -            |
| G3                 | JPL5-G3(1)            | -                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 20 U             | 20 U             | 20 U             | 20 U             | 20 U             | 20 U             | 38               | -               | -              | 17           | -                | -            |
| G4                 | JPL5-G4(1)            | -                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 20 U             | 20 U             | 20 U             | 20 U             | 20 U             | 20 U             | 100              | -               | -              | 18           | -                | -            |



Table 3-9

**Composite and Confirmation Soil Sample Results**  
**Site L5 - PCN Excavation**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|                    |                       | XRF Unit Results |                               |                             |                              |                                |                                |                               |                                |                               |                  | Fixed Laboratory Results |                  |                  |                  |                  |                  |                 |                |              |                  |              |       |  |  |  |
|--------------------|-----------------------|------------------|-------------------------------|-----------------------------|------------------------------|--------------------------------|--------------------------------|-------------------------------|--------------------------------|-------------------------------|------------------|--------------------------|------------------|------------------|------------------|------------------|------------------|-----------------|----------------|--------------|------------------|--------------|-------|--|--|--|
| Sample Designation | Sample Identification | Lead (mg/kg)     | Monochloronaphthalene (µg/kg) | Dichloronaphthalene (µg/kg) | Trichloronaphthalene (µg/kg) | Tetrachloronaphthalene (µg/kg) | Pentachloronaphthalene (µg/kg) | Hexachloronaphthalene (µg/kg) | Heptachloronaphthalene (µg/kg) | Octachloronaphthalene (µg/kg) | PCB-1016 (µg/kg) | PCB-1221 (µg/kg)         | PCB-1232 (µg/kg) | PCB-1242 (µg/kg) | PCB-1248 (µg/kg) | PCB-1254 (µg/kg) | PCB-1260 (µg/kg) | Arsenic (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Thallium (mg/kg) | Zinc (mg/kg) |       |  |  |  |
|                    |                       | LRG              | 500                           | 1,000                       | 1,000                        | 1,000                          | 1,000                          | 1,000                         | 1,000                          | 1,000                         | 1,000            | 1,000                    | 1,000            | 1,000            | 1,000            | 1,000            | 1,000            | 1,000           | 21             | 190          | 500              | 0.64         | 720   |  |  |  |
| URG                |                       | 500              | 1,000                         | 1,000                       | 1,000                        | 1,000                          | 1,000                          | 1,000                         | 1,000                          | 1,000                         | 1,000            | 1,000                    | 1,000            | 1,000            | 1,000            | 1,000            | 1,000            | 1,000           | 84             | 925          | 500              | 86           | 2,500 |  |  |  |
| G5                 | JPL5-G5(1)            | -                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 20 U             | 20 U                     | 20 U             | 20 U             | 20 U             | 20 U             | 130              | -               | -              | 20           | -                | -            |       |  |  |  |
| H1                 | JPL5-H1(1)            | -                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 19 U             | 19 U                     | 19 U             | 19 U             | 19 U             | 19 U             | 20               | -               | -              | 21           | -                | -            |       |  |  |  |
| H2                 | JPL5-H2(1)            | -                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 20 U             | 20 U                     | 20 U             | 20 U             | 20 U             | 20 U             | 16 J             | -               | -              | 17           | -                | -            |       |  |  |  |
| H3                 | JPL5-H3(1)            | -                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 21 U             | 21 U                     | 21 U             | 21 U             | 21 U             | 21 U             | 18 J             | -               | -              | 17           | -                | -            |       |  |  |  |
| H4                 | JPL5-H4(1)            | -                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 20 U             | 20 U                     | 20 U             | 20 U             | 20 U             | 20 U             | 16 J             | -               | -              | 19           | -                | -            |       |  |  |  |
| H5                 | JPL5-H5(1)            | -                | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 21 U             | 21 U                     | 21 U             | 21 U             | 21 U             | 21 U             | 15 J             | -               | -              | 16           | -                | -            |       |  |  |  |
| I1                 | JPL5-I1(1)            | 31               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 21 U             | 21 U                     | 21 U             | 21 U             | 21 U             | 21 U             | 29               | -               | -              | -            | -                | -            |       |  |  |  |
| I2                 | JPL5-I2(1)            | 19               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 21 U             | 21 U                     | 21 U             | 21 U             | 21 U             | 21 U             | 29               | -               | -              | -            | -                | -            |       |  |  |  |
| I3                 | JPL5-I3(1)            | 25               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 20 U             | 20 U                     | 20 U             | 20 U             | 20 U             | 20 U             | 29               | -               | -              | -            | -                | -            |       |  |  |  |
| I4                 | JPL5-I4(1)            | 22               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 20 U             | 20 U                     | 20 U             | 20 U             | 20 U             | 20 U             | 36               | -               | -              | -            | -                | -            |       |  |  |  |
| I5                 | JPL5-I5(1)            | 27               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 21 U             | 21 U                     | 21 U             | 21 U             | 21 U             | 21 U             | 40               | -               | -              | -            | -                | -            |       |  |  |  |
| J1                 | JPL5-J1(1)            | 21               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 21 U             | 21 U                     | 21 U             | 21 U             | 21 U             | 21 U             | 17 J             | -               | -              | -            | -                | -            |       |  |  |  |
| J2                 | JPL5-J2(1)            | <18              | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 22 U             | 22 U                     | 22 U             | 22 U             | 22 U             | 22 U             | 24               | -               | -              | -            | -                | -            |       |  |  |  |
| J3                 | JPL5-J3(1)            | <18              | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 20 U             | 20 U                     | 20 U             | 20 U             | 20 U             | 20 U             | 14 J             | -               | -              | -            | -                | -            |       |  |  |  |
| J4                 | JPL5-J4(1)            | <16              | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 21 U             | 21 U                     | 21 U             | 21 U             | 21 U             | 21 U             | 18 J             | -               | -              | -            | -                | -            |       |  |  |  |
| J5                 | JPL5-J5(1)            | 24               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 21 U             | 21 U                     | 21 U             | 21 U             | 21 U             | 21 U             | 14 J             | -               | -              | -            | -                | -            |       |  |  |  |
| K1                 | JPL5-K1(1)            | 18               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 21 U             | 21 U                     | 21 U             | 21 U             | 21 U             | 21 U             | 11 J             | -               | -              | -            | -                | -            |       |  |  |  |
| K2                 | JPL5-K2(1)            | 22               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 21 U             | 21 U                     | 21 U             | 21 U             | 21 U             | 21 U             | 13 J             | -               | -              | -            | -                | -            |       |  |  |  |
| K3                 | JPL5-K3(1)            | 17               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 21 U             | 21 U                     | 21 U             | 21 U             | 21 U             | 21 U             | 9.2 J            | -               | -              | -            | -                | -            |       |  |  |  |
| K4                 | JPL5-K4(1)            | 25               | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 21 U             | 21 U                     | 21 U             | 21 U             | 21 U             | 21 U             | 12 J             | -               | -              | -            | -                | -            |       |  |  |  |
| K5                 | JPL5-K5(1)            | <17              | -                             | -                           | -                            | -                              | -                              | -                             | -                              | -                             | 21 U             | 21 U                     | 21 U             | 21 U             | 21 U             | 21 U             | 13 J             | -               | -              | -            | -                | -            |       |  |  |  |

**Notes:**

a = lead result was greater than LRG/URG criteria. Additional excavation was conducted to remove lead-impacted soils.

Refer to sample designations AP5 through AP9 and AF5 through AF8 for final lead confirmation sample results.

Result = Result is greater than the LRG

Result = Result reported to the method detection limit

Result = Result reported to the method detection limit, but the method detection limit is greater than the LRG and URG criteria

- = not analyzed

LRG = lower remediation goal

µg/kg = micrograms per kilogram

mg/kg = milligrams per kilogram

PCB = polychlorinated biphenyl

PCN = polychlorinated naphthalene

URG = upper remediation goal

**Qualifiers:**

B = The compound was also detected in the method blank.

J = Indicates an estimated value.

U = Indicates that the compound or analyte was analyzed for, but not detected at or above the stated limit.



**Table 3-10**

**Confirmation Soil Sample Results  
Site L23A  
Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
Phase 2 Remedial Action  
Joliet Army Ammunition Plant  
Wilmington, Illinois**

| Sample Designation | Sample Identification | Fixed Laboratory Results |                 |                |                  |                |              |                |              |
|--------------------|-----------------------|--------------------------|-----------------|----------------|------------------|----------------|--------------|----------------|--------------|
|                    |                       | Antimony (mg/kg)         | Arsenic (mg/kg) | Barium (mg/kg) | Chromium (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Nickel (mg/kg) | Zinc (mg/kg) |
|                    | LRG                   | 50                       | 21              | 625            | 213              | 190            | 500          | 210            | 720          |
|                    | URG                   | 757                      | 84              | 1,950          | 213              | 925            | 500          | 2,090          | 2,500        |
| AF1                | JPL23A-AF1(6)         | 0.84 B                   | 8.8             | 50             | 18               | 24             | 12           | 27             | 59           |
| AF2                | JPL23A-AF2(6)         | 0.53 B                   | 10              | 51             | 18               | 25             | 11           | 28             | 56           |
| AF3                | JPL23A-AF3(6)         | 2.3 U                    | 7.6             | 50             | 17               | 21             | 11           | 26             | 51           |
| AF4                | JPL23A-AF4(6)         | 2.3 U                    | 8.9             | 51             | 19               | 21             | 14           | 25             | 57           |
| AF5                | JPL23A-AF5(6)         | 2.0 U                    | 8.2             | 47             | 18               | 23             | 11           | 23             | 54           |
| AF6                | JPL23A-AF6(6)         | 2.0 U                    | 8.5             | 55             | 17               | 23             | 12           | 26             | 57           |
| AF7                | JPL23A-AF7(6)         | 1.3 B                    | --              | 70             | 17               | --             | 30           | --             | 95           |
| AF8                | JPL23A-AF8(6)         | 0.45 B                   | --              | 51             | 14               | --             | 13           | --             | 60           |
| AF9                | JPL23A-AF9(6)         | 2.3 U                    | --              | 49             | 17               | --             | 8.9          | --             | 48           |
| AF10               | JPL23A-AF10(6)        | 1.7 B                    | --              | 54             | 17               | --             | 13           | --             | 50           |
| AF11               | JPL23A-AF11(6)        | 0.88 B                   | --              | 49             | 16               | --             | 12           | --             | 60           |
| AF12               | JPL23A-AF12(6)        | 1.2 B                    | --              | 46             | 15               | --             | 13           | --             | 58           |
| AP1                | JPL23A-AP1(1)         | 1.4 B                    | 9.3             | 140            | 19               | 21             | 29           | 18             | 78           |
| AP2                | JPL23A-AP2(4)         | 2.4 U                    | 9.5             | 52             | 18               | 24             | 11           | 24             | 57           |
| AP3                | JPL23A-AP3(1)         | 2.5 B                    | 11              | 120            | 24               | 34             | 54           | 24             | 140          |
| AP4                | JPL23A-AP4(4)         | 2.3 U                    | 9.2             | 59             | 18               | 25             | 12           | 29             | 60           |
| AP5                | JPL23A-AP5(1)         | 2.2 U                    | 5.2             | 99             | 21               | 19             | 15           | 16             | 51           |
| AP6                | JPL23A-AP6(4)         | 2.3 U                    | 16              | 58             | 16               | 23             | 12           | 26             | 59           |
| AP7                | JPL23A-AP7(1)         | 0.70 B                   | 13              | 110            | 22               | 28             | 17           | 31             | 64           |
| AP8                | JPL23A-AP8(4)         | 2.3 U                    | 9.6             | 59             | 17               | 25             | 12           | 29             | 54           |
| AP9                | JPL23A-AP9(1)         | 2.3                      | 9.2             | 130            | 22               | 19             | 58           | 17             | 84           |
| AP10               | JPL23A-AP10(4)        | 0.72 B                   | 11              | 48             | 16               | 25             | 13           | 24             | 61           |
| AP11               | JPL23A-AP11(1)        | 0.54 B                   | 15              | 150            | 23               | 27             | 21           | 38             | 79           |
| AP12               | JPL23A-AP12(4)        | 2.3 U                    | 10              | 50             | 16               | 23             | 11           | 27             | 60           |
| AP13               | JPL23A-AP13(1)        | 1.1 B                    | 15              | 110            | 23               | 35             | 29           | 38             | 110          |



**Table 3-10**

**Confirmation Soil Sample Results  
Site L23A  
Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
Phase 2 Remedial Action  
Joliet Army Ammunition Plant  
Wilmington, Illinois**

|                    |                       | Fixed Laboratory Results |                 |                |                  |                |              |                |              |
|--------------------|-----------------------|--------------------------|-----------------|----------------|------------------|----------------|--------------|----------------|--------------|
| Sample Designation | Sample Identification | Antimony (mg/kg)         | Arsenic (mg/kg) | Barium (mg/kg) | Chromium (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Nickel (mg/kg) | Zinc (mg/kg) |
| LRG                |                       | 50                       | 21              | 625            | 213              | 190            | 500          | 210            | 720          |
| URG                |                       | 757                      | 84              | 1,950          | 213              | 925            | 500          | 2,090          | 2,500        |
| AP14               | JPL23A-AP14(4)        | 2.2 U                    | 10              | 49             | 17               | 24             | 13           | 29             | 61           |
| AP15               | JPL23A-AP15(1)        | 2.4 U                    | 12              | 70             | 17               | 28             | 14           | 30             | 64           |
| AP16               | JPL23A-AP16(4)        | 2.1 U                    | --              | 44             | 15               | --             | 13           | --             | 57           |
| AP18               | JPL23A-AP18(4)        | 0.57 B                   | --              | 55             | 16               | --             | 19           | --             | 70           |
| AP19               | JPL23A-AP19(1)        | 1.2 B                    | --              | 160            | 22               | --             | 20           | --             | 76           |
| AP20               | JPL23A-AP20(4)        | 2.2 U                    | --              | 77             | 15               | --             | 14           | --             | 58           |
| AP21               | JPL23A-AP21(1)        | 0.59 B                   | --              | 100            | 15               | --             | 12           | --             | 48           |
| AP22               | JPL23A-AP22(4)        | 0.60 B                   | --              | 56             | 13               | --             | 14           | --             | 62           |
| AP23               | JPL23A-AP23(1)        | 0.97 B                   | --              | 130            | 24               | --             | 17           | --             | 81           |
| AP24               | JPL23A-AP24(4)        | 0.57 B                   | --              | 62             | 16               | --             | 12           | --             | 57           |
| AP25               | JPL23A-AP25(1)        | 0.62 B                   | --              | 63             | 16               | --             | 13           | --             | 57           |
| AP26               | JPL23A-AP26(4)        | 0.70 B                   | --              | 59             | 16               | --             | 14           | --             | 61           |
| AP27               | JPL23A-AP27(1)        | 0.79 B                   | --              | 110            | 19               | --             | 16           | --             | 57           |
| AP28               | JPL23A-AP28(4)        | 0.63 B                   | --              | 68             | 15               | --             | 16           | --             | 60           |
| AP29               | JPL23A-AP29(1)        | 0.54 B                   | --              | 100            | 18               | --             | 14           | --             | 64           |
| AP30               | JPL23A-AP30(4)        | 0.51 B                   | --              | 54             | 14               | --             | 12           | --             | 56           |
| AP31               | JPL23A-AP31(1)        | --                       | --              | --             | --               | --             | --           | --             | 260          |

Notes:

-- = not analyzed

LRG = lower remediation goal

mg/kg = milligrams per kilogram

URG = upper remediation goal

Qualifiers:

B = The compound was also detected in the method blank.

U = Indicates that the compound or analyte was analyzed for, but not detected at or above the stated limit.



**Table 3-11**  
**Confirmation Soil Sample Results**  
**Site M3 - Flashing Grounds**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

| Sample Designation | Sample Identification     | Test Kit Results <sup>1</sup> | XRF Unit Results | Fixed Laboratory Results |                   |                      |                        |                    |                            |                        |                              |                              |                              |                  |                                |                      |                  |
|--------------------|---------------------------|-------------------------------|------------------|--------------------------|-------------------|----------------------|------------------------|--------------------|----------------------------|------------------------|------------------------------|------------------------------|------------------------------|------------------|--------------------------------|----------------------|------------------|
|                    |                           | 2,4,6-TNT (mg/kg)             | Lead (mg/kg)     | 1,3,5-TNB (mg/kg)        | 2,4,6-TNT (mg/kg) | Acenaphthene (µg/kg) | Acenaphthylene (µg/kg) | Anthracene (µg/kg) | Benzo(a)anthracene (µg/kg) | Benzo(a)pyrene (µg/kg) | Benzo(b)fluoranthene (µg/kg) | Benzo(g,h,i)perylene (µg/kg) | Benzo(k)fluoranthene (µg/kg) | Chrysene (µg/kg) | Dibenzo(a,h)anthracene (µg/kg) | Fluoranthene (µg/kg) | Fluorene (µg/kg) |
|                    | LRG                       | 200                           | 500              | 17                       | 200               | 98,386,000           | NE                     | 491,930,000        | 17,000                     | 2,000                  | 17,000                       | NE                           | 171,000                      | 1,708,000        | 1,700                          | 65,591,000           | 65,591,000       |
|                    | URG                       | 459                           | 500              | 386                      | 459               | 98,386,000           | NE                     | 491,930,000        | 17,000                     | 2,000                  | 17,000                       | NE                           | 171,000                      | 1,708,000        | 1,700                          | 65,591,000           | 65,591,000       |
| AF1                | JPM3-ITF-AF1(2)           | 0.051                         | -                | -                        | -                 | 36 U                 | 36 U                   | 36 U               | 36 U                       | 36 U                   | 36 U                         | 29 J                         | 36 U                         | 36 U             | 36 U                           | 36 U                 | 36 U             |
| AF6                | JPM3-ITF-AF6(2)           | 1.547                         | -                | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 38 U                       | 7.9 J                  | 12 J                         | 10 J                         | 38 U                         | 38 U             | 38 U                           | 38 U                 | 38 U             |
| AF7                | JPM3-ITF-AF7(2)           | 0.935                         | -                | -                        | -                 | 39 U                 | 39 U                   | 39 U               | 22 J                       | 17 J                   | 15 J                         | 21 J                         | 39 U                         | 13 J             | 19 J                           | 39 U                 | 39 U             |
| AF8                | JPM3-ITF-AF8(2)           | 1.702                         | -                | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 27 J                       | 16 J                   | 23 J                         | 28 J                         | 15 J                         | 22 J             | 40 U                           | 23 J                 | 40 U             |
| AF9                | JPM3-ITF-AF9(2)           | 2.171                         | -                | -                        | -                 | 39 U                 | 39 U                   | 39 U               | 39 U                       | 39 U                   | 39 U                         | 39 U                         | 39 U                         | 39 U             | 39 U                           | 39 U                 | 39 U             |
| AF10               | JPM3-ITF-AF10(2)          | 2.785                         | -                | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 42 U                       | 42 U                   | 42 U                         | 42 U                         | 42 U                         | 42 U             | 42 U                           | 42 U                 | 42 U             |
| AF12               | JPM3-ITF-AF12(2)          | 0.8513                        | 33               | -                        | -                 | 41 U                 | 41 U                   | 41 U               | 41 U                       | 41 U                   | 41 U                         | 41 U                         | 41 U                         | 41 U             | 41 U                           | 41 U                 | 41 U             |
| AF15               | JPM3-ITF-AF15(2)          | 0.4653                        | 20               | -                        | -                 | 41 U                 | 41 U                   | 41 U               | 41 U                       | 41 U                   | 41 U                         | 41 U                         | 41 U                         | 41 U             | 41 U                           | 41 U                 | 41 U             |
| AF16               | JPM3-ITF-AF16(2)          | 0.9287                        | 22               | -                        | -                 | 41 U                 | 41 U                   | 41 U               | 41 U                       | 41 U                   | 41 U                         | 41 U                         | 41 U                         | 41 U             | 41 U                           | 41 U                 | 41 U             |
| AF17               | JPM3-ITF-AF17(2)          | 0.4136                        | 20               | -                        | -                 | 41 U                 | 41 U                   | 41 U               | 41 U                       | 41 U                   | 41 U                         | 41 U                         | 41 U                         | 41 U             | 41 U                           | 41 U                 | 41 U             |
| AF28               | JPM3-ITF-AF28(2)          | 0.232                         | 57               | -                        | -                 | 35 U                 | 35 U                   | 35 U               | 35 U                       | 35 U                   | 35 U                         | 35 U                         | 35 U                         | 35 U             | 35 U                           | 35 U                 | 35 U             |
| AF29               | JPM3-ITF-AF29(2)          | 1.344                         | <18              | -                        | -                 | 39 U                 | 39 U                   | 39 U               | 39 U                       | 39 U                   | 39 U                         | 39 U                         | 39 U                         | 39 U             | 39 U                           | 39 U                 | 39 U             |
| AF30               | JPM3-ITF-AF30(2)          | -1.238                        | 225              | -                        | -                 | 19 J                 | 42 U                   | 170                | 1,700                      | 1,500                  | 2,000                        | 1,100                        | 1,200                        | 1,800            | 520                            | 3,100                | 30 J             |
| AF31               | JPM3-ITF-AF31(2)          | -3.715                        | 44               | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 18 J                       | 17 J                   | 24 J                         | 40 U                         | 21 J                         | 24 J             | 40 U                           | 24 J                 | 40 U             |
| AF32               | JPM3-ITF-AF32(2)          | 0.361                         | <19              | -                        | -                 | 39 U                 | 39 U                   | 39 U               | 39 U                       | 39 U                   | 39 U                         | 39 U                         | 39 U                         | 39 U             | 39 U                           | 39 U                 | 39 U             |
| AF33               | JPM3-ITF-AF33(2)          | 0.77                          | 46               | -                        | -                 | 37 U                 | 37 U                   | 37 U               | 24 J                       | 26 J                   | 34 J                         | 18 J                         | 24 J                         | 29 J             | 8.2 J                          | 49                   | 37 U             |
| AF34               | JPM3-ITF-AF34(2)          | 0.982                         | 28               | -                        | -                 | 37 U                 | 37 U                   | 37 U               | 37 U                       | 37 U                   | 37 U                         | 37 U                         | 37 U                         | 37 U             | 37 U                           | 37 U                 | 37 U             |
| AF35               | JPM3-ITF-AF35(2)          | 0.89                          | 34               | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 19 J                       | 36 J                   | 44                           | 30 J                         | 38 J                         | 26 J             | 14 J                           | 20 J                 | 42 U             |
| AF36               | JPM3-ITF-AF36(3)          | 2.378                         | 66               | -                        | -                 | 41 U                 | 41 U                   | 41 U               | 41 U                       | 41 U                   | 41 U                         | 23 J                         | 41 U                         | 41 U             | 41 U                           | 41 U                 | 41 U             |
| AF37               | JPM3-ITF-AF37(3)/AF37B(1) | 4.633                         | <17              | -                        | -                 | 37 U                 | 37 U                   | 37 U               | 37 U                       | 37 U                   | 37 U                         | 37 U                         | 37 U                         | 37 U             | 37 U                           | 37 U                 | 37 U             |
| AF38               | JPM3-ITF-AF38(2)          | 1.085                         | 75               | -                        | -                 | 37 U                 | 37 U                   | 37 U               | 37 U                       | 37 U                   | 37 U                         | 37 U                         | 37 U                         | 37 U             | 37 U                           | 37 U                 | 37 U             |
| AF39               | JPM3-ITF-AF39(2)          | 1.547                         | 20               | -                        | -                 | 37 U                 | 37 U                   | 27 U               | 25 J                       | 28 J                   | 28 J                         | 26 J                         | 34 J                         | 31 J             | 37 U                           | 50                   | 37 U             |
| AF40               | JPM3-ITF-AF40(2)          | 1.447                         | 24               | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 38 U                       | 38 U                   | 38 U                         | 38 U                         | 38 U                         | 38 U             | 38 U                           | 38 U                 | 38 U             |
| AF42               | JPM3-ITF-AF42(2)          | 1.344                         | 32               | -                        | -                 | 39 U                 | 39 U                   | 39 U               | 39 U                       | 39 U                   | 39 U                         | 39 U                         | 39 U                         | 39 U             | 39 U                           | 39 U                 | 39 U             |
| AF43               | JPM3-ITF-AF43(2)          | 1.547                         | 31               | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 40 U                       | 40 U                   | 40 U                         | 40 U                         | 40 U                         | 40 U             | 40 U                           | 40 U                 | 40 U             |
| AF44               | JPM3-ITF-AF44(2)          | 1.167                         | 115              | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 63                         | 78                     | 84                           | 74                           | 83                           | 84               | 29 J                           | 110                  | 38 U             |
| AF46               | JPM3-ITF-AF46(2)          | -                             | -                | 0.25 U                   | 0.25 U            | 42 U                 | 42 U                   | 42 U               | 42 U                       | 42 U                   | 42 U                         | 42 U                         | 42 U                         | 42 U             | 42 U                           | 42 U                 | 42 U             |
| AF47               | JPM3-ITF-AF47(2)          | -                             | -                | 0.25 U                   | 0.25 U            | 42 U                 | 42 U                   | 42 U               | 42 U                       | 42 U                   | 42 U                         | 42 U                         | 42 U                         | 42 U             | 42 U                           | 42 U                 | 42 U             |
| AF48               | JPM3-ITF-AF48(2)          | -                             | -                | 0.25 U                   | 0.25 U            | 41 U                 | 41 U                   | 41 U               | 41 U                       | 41 U                   | 41 U                         | 41 U                         | 41 U                         | 41 U             | 41 U                           | 41 U                 | 41 U             |
| AF49               | JPM3-ITF-AF49(2)/AF49B(1) | -                             | -                | 0.25 U                   | 0.69              | 41 U                 | 41 U                   | 41 U               | 41 U                       | 41 U                   | 23 J                         | 41 U                         | 23 J                         | 41 U             | 41 U                           | 41 U                 | 41 U             |
| AF51               | JPM3-ITF-AF51(2)          | -                             | -                | 0.24 U                   | 0.24 U            | 39 U                 | 39 U                   | 39 U               | 39 U                       | 39 U                   | 39 U                         | 39 U                         | 39 U                         | 39 U             | 39 U                           | 39 U                 | 39 U             |
| AF52               | JPM3-ITF-AF52(2)          | -                             | -                | 0.24 U                   | 0.24 U            | 41 U                 | 41 U                   | 41 U               | 41 U                       | 41 U                   | 41 U                         | 41 U                         | 41 U                         | 41 U             | 41 U                           | 41 U                 | 41 U             |
| AF53               | JPM3-ITF-AF53(2)          | -                             | -                | 0.25 U                   | 0.25 U            | 41 U                 | 41 U                   | 41 U               | 41 U                       | 41 U                   | 41 U                         | 41 U                         | 41 U                         | 41 U             | 41 U                           | 41 U                 | 41 U             |
| AF54               | JPM3-ITF-AF54(2)          | -                             | -                | 0.25 U                   | 0.25 U            | 41 U                 | 22 J                   | 25 J               | 59                         | 84                     | 99                           | 79                           | 100                          | 82               | 34 J                           | 89                   | 41 U             |
| AF55               | JPM3-ITF-AF55(2)          | -                             | -                | 0.25 U                   | 0.25 U            | 40 U                 | 40 U                   | 40 U               | 40 U                       | 40 U                   | 40 U                         | 40 U                         | 40 U                         | 40 U             | 40 U                           | 40 U                 | 40 U             |
| AF56               | JPM3-ITF-AF56(2)          | 1.118                         | 112              | -                        | -                 | 44 U                 | 44 U                   | 44 U               | 44 U                       | 18 J                   | 19 J                         | 39 J                         | 44 U                         | 18 J             | 21 J                           | 20 J                 | 44 U             |
| AF57               | JPM3-ITF-AF57(2)          | 2.244                         | 22               | -                        | -                 | 43 U                 | 43 U                   | 43 U               | 43 U                       | 43 U                   | 43 U                         | 31 J                         | 43 U                         | 43 U             | 26 J                           | 43 U                 | 43 U             |
| AF58               | JPM3-ITF-AF58(2)          | 3.619                         | <18              | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 42 U                       | 42 U                   | 42 U                         | 42 U                         | 42 U                         | 42 U             | 42 U                           | 42 U                 | 42 U             |
| AF59               | JPM3-ITF-AF59(2)          | 2.326                         | <16              | -                        | -                 | 39 U                 | 39 U                   | 39 U               | 39 U                       | 39 U                   | 39 U                         | 39 U                         | 39 U                         | 39 U             | 39 U                           | 39 U                 | 39 U             |
| AF60               | JPM3-ITF-AF60(2)          | 2.585                         | 22               | -                        | -                 | 43 U                 | 43 U                   | 43 U               | 43 U                       | 43 U                   | 43 U                         | 43 U                         | 43 U                         | 43 U             | 43 U                           | 43 U                 | 43 U             |



Table 3-11

Confirmation Soil Sample Results  
 Site M3 - Flashing Grounds  
 Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
 Phase 2 Remedial Action  
 Joliet Army Ammunition Plant  
 Wilmington, Illinois

|                    |                           | Test Kit Results <sup>1</sup> | XRF Unit Results | Fixed Laboratory Results |                   |                      |                        |                    |                            |                        |                              |                            |                              |                  |                               |                      |                  |
|--------------------|---------------------------|-------------------------------|------------------|--------------------------|-------------------|----------------------|------------------------|--------------------|----------------------------|------------------------|------------------------------|----------------------------|------------------------------|------------------|-------------------------------|----------------------|------------------|
| Sample Designation | Sample Identification     | 2,4,6-TNT (mg/kg)             | Lead (mg/kg)     | 1,2,5-TNB (mg/kg)        | 2,4,6-TNT (mg/kg) | Acenaphthene (µg/kg) | Acenaphthylene (µg/kg) | Anthracene (µg/kg) | Benzo(a)anthracene (µg/kg) | Benzo(b)pyrene (µg/kg) | Benzo(k)fluoranthene (µg/kg) | Benzo(ghi)perylene (µg/kg) | Benzo(e)fluoranthene (µg/kg) | Chrysene (µg/kg) | Dibenz(a,h)anthracene (µg/kg) | Fluoranthene (µg/kg) | Fluorene (µg/kg) |
|                    | LRG                       | 200                           | 500              | 17                       | 200               | 98,386,000           | NE                     | 491,930,000        | 17,000                     | 2,000                  | 17,000                       | NE                         | 171,000                      | 1,708,000        | 1,700                         | 65,591,000           | 65,591,000       |
|                    | URG                       | 459                           | 500              | 386                      | 459               | 98,386,000           | NE                     | 491,930,000        | 17,000                     | 2,000                  | 17,000                       | NE                         | 171,000                      | 1,708,000        | 1,700                         | 65,591,000           | 65,591,000       |
| AF62               | JPM3-ITF-AF62(2)          | 2.119                         | 29               | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 42 U                       | 42 U                   | 42 U                         | 42 U                       | 42 U                         | 42 U             | 42 U                          | 42 U                 | 42 U             |
| AF63               | JPM3-ITF-AF63(2)          | 2.554                         | <18              | -                        | -                 | 44 U                 | 44 U                   | 44 U               | 44 U                       | 44 U                   | 44 U                         | 44 U                       | 44 U                         | 44 U             | 44 U                          | 44 U                 | 44 U             |
| AF64               | JPM3-ITF-AF64(2)          | 92.968                        | 22               | -                        | -                 | 44 U                 | 44 U                   | 44 U               | 44 U                       | 44 U                   | 44 U                         | 44 U                       | 44 U                         | 44 U             | 44 U                          | 44 U                 | 44 U             |
| AF65               | JPM3-ITF-AF65(2)          | 1.705                         | 27               | -                        | -                 | 41 U                 | 41 U                   | 41 U               | 41 U                       | 41 U                   | 41 U                         | 41 U                       | 41 U                         | 41 U             | 41 U                          | 41 U                 | 41 U             |
| AF66               | JPM3-ITF-AF66(2)          | 1.654                         | 29               | -                        | -                 | 39 U                 | 39 U                   | 39 U               | 39 U                       | 39 U                   | 39 U                         | 39 U                       | 39 U                         | 39 U             | 39 U                          | 39 U                 | 39 U             |
| AF67               | JPM3-ITF-AF67(2)          | 2.786                         | 53               | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 40 U                       | 40 U                   | 40 U                         | 40 U                       | 40 U                         | 40 U             | 40 U                          | 40 U                 | 40 U             |
| AF68               | JPM3-ITF-AF68(2)          | 3.947                         | 46               | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 13 J                       | 16 J                   | 15 J                         | 13 J                       | 16 J                         | 15 J             | 38 U                          | 30 J                 | 38 U             |
| AF69               | JPM3-ITF-AF69(2)          | 2.223                         | <19              | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 40 U                       | 40 U                   | 40 U                         | 40 U                       | 40 U                         | 40 U             | 40 U                          | 40 U                 | 40 U             |
| AF70               | JPM3-ITF-AF70(2)          | 1.085                         | 28               | -                        | -                 | 41 U                 | 41 U                   | 41 U               | 41 U                       | 41 U                   | 41 U                         | 41 U                       | 41 U                         | 41 U             | 41 U                          | 41 U                 | 41 U             |
| AF71               | JPM3-ITF-AF71(2)          | 2.012                         | <19              | -                        | -                 | 45 U                 | 45 U                   | 45 U               | 20 J                       | 21 J                   | 32 J                         | 20 J                       | 17 J                         | 32 J             | 45 U                          | 67                   | 45 U             |
| AF72               | JPM3-ITF-AF72(2)          | -0.713                        | 71               | -                        | -                 | 46 U                 | 46 U                   | 46 U               | 46 U                       | 46 U                   | 46 U                         | 46 U                       | 46 U                         | 46 U             | 46 U                          | 46 U                 | 46 U             |
| AF73               | JPM3-ITF-AF73(2)          | 0.723                         | 59               | -                        | -                 | 43 U                 | 43 U                   | 43 U               | 26 J                       | 23 J                   | 41 J                         | 17 J                       | 13 J                         | 29 J             | 43 U                          | 64                   | 43 U             |
| AF74               | JPM3-ITF-AF74(2)          | 1.034                         | 17               | -                        | -                 | 43 U                 | 43 U                   | 43 U               | 43 U                       | 9.8 J                  | 17 J                         | 43 U                       | 43 U                         | 11 J             | 43 U                          | 14 J                 | 43 U             |
| AF75               | JPM3-ITF-AF75(2)          | 1.857                         | -                | -                        | -                 | 13 J                 | 57                     | 68                 | 96                         | 160                    | 260                          | 170                        | 130                          | 160              | 50 J                          | 150                  | 15 J             |
| AF76               | JPM3-ITF-AF76(2)          | 0.103                         | 35               | -                        | -                 | 43 U                 | 43 U                   | 43 U               | 43 U                       | 43 U                   | 43 U                         | 43 U                       | 43 U                         | 43 U             | 43 U                          | 43 U                 | 43 U             |
| AF77               | JPM3-ITF-AF77(2)          | 0.672                         | 43               | -                        | -                 | 41 U                 | 41 U                   | 41 U               | 41 U                       | 41 U                   | 41 U                         | 41 U                       | 41 U                         | 41 U             | 41 U                          | 41 U                 | 41 U             |
| AF78               | JPM3-ITF-AF78(2)          | 0.672                         | 26               | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 42 U                       | 42 U                   | 42 U                         | 42 U                       | 42 U                         | 42 U             | 42 U                          | 42 U                 | 42 U             |
| AF79               | JPM3-ITF-AF79(2)          | 1.189                         | 53               | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 26 J                       | 30 J                   | 45                           | 20 J                       | 21 J                         | 36 J             | 42 U                          | 45                   | 42 U             |
| AF80               | JPM3-ITF-AF80(2)          | 1.551                         | 32               | -                        | -                 | 45 U                 | 18 J                   | 14 J               | 54                         | 100                    | 160                          | 53                         | 97                           | 90               | 18 J                          | 18 J                 | 45 U             |
| AF81               | JPM3-ITF-AF81(2)          | 0.928                         | 363              | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 21 J                       | 17 J                   | 27 J                         | 16 J                       | 17 J                         | 29 J             | 40 U                          | 55                   | 40 U             |
| AF82               | JPM3-ITF-AF82(2)          | 0                             | 295              | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 31 J                       | 35 J                   | 69                           | 38                         | 25 J                         | 55               | 38 U                          | 68                   | 38 U             |
| AF83               | JPM3-ITF-AF83(2)          | 4.17                          | 89               | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 37 J                       | 36 J                   | 60                           | 32 J                       | 26 J                         | 56               | 40 U                          | 110                  | 40 U             |
| AF84               | JPM3-ITF-AF84(2)          | 2.47                          | 22               | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 27 J                       | 33 J                   | 43                           | 28 J                       | 19 J                         | 29 J             | 42 U                          | 45                   | 42 U             |
| AF85               | JPM3-ITF-AF85(2)          | 3.56                          | 39               | -                        | -                 | 36 U                 | 36 U                   | 36 U               | 16 J                       | 36 U                   | 21 J                         | 27 J                       | 32 J                         | 20 J             | 36 U                          | 36 U                 | 36 U             |
| AF86               | JPM3-ITF-AF86(2)          | 83.823                        | 47               | -                        | -                 | 36 U                 | 36 U                   | 36 U               | 7.6 J                      | 36 U                   | 16 J                         | 19 J                       | 36 U                         | 15 J             | 36 U                          | 12 J                 | 36 U             |
| AF87               | JPM3-ITF-AF87(2)          | 38.854                        | 160              | -                        | -                 | 39 U                 | 39 U                   | 39 U               | 39 U                       | 17 J                   | 22 J                         | 19 J                       | 24 J                         | 39 U             | 39 U                          | 22 J                 | 39 U             |
| AF88               | JPM3-ITF-AF88(2)          | 3.153                         | 57               | -                        | -                 | 36 U                 | 36 U                   | 36 U               | 36 U                       | 36 U                   | 36 U                         | 36 U                       | 36 U                         | 36 U             | 36 U                          | 36 U                 | 36 U             |
| AF89               | JPM3-ITF-AF89(2)          | 17.105                        | -                | -                        | -                 | 35 U                 | 35 U                   | 35 U               | 35 U                       | 35 U                   | 35 U                         | 35 U                       | 35 U                         | 35 U             | 35 U                          | 35 U                 | 35 U             |
| AF90               | JPM3-ITF-AF90(2)          | 15.944                        | 162              | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 10 J                       | 38 U                   | 20 J                         | 38 U                       | 38 U                         | 20 J             | 38 U                          | 22 J                 | 38 U             |
| AF91               | JPM3-ITF-AF91(2)          | 58.682                        | 52               | -                        | -                 | 37 U                 | 37 U                   | 37 U               | 37 U                       | 37 U                   | 37 U                         | 37 U                       | 37 U                         | 37 U             | 37 U                          | 37 U                 | 37 U             |
| AF92               | JPM3-ITF-AF92(2)          | -4.489                        | 125              | -                        | -                 | 37 U                 | 37 U                   | 37 U               | 37 U                       | 37 U                   | 37 U                         | 37 U                       | 37 U                         | 37 U             | 37 U                          | 37 U                 | 37 U             |
| AF93               | JPM3-ITF-AF93(2)          | -1.315                        | 49               | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 38 U                       | 38 U                   | 38 U                         | 38 U                       | 38 U                         | 38 U             | 38 U                          | 38 U                 | 38 U             |
| AF94               | JPM3-ITF-AF94(2)          | 8.065                         | 209              | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 38 U                       | 38 U                   | 38 U                         | 38 U                       | 38 U                         | 38 U             | 38 U                          | 38 U                 | 38 U             |
| AF95               | JPM3-ITF-AF95(2)          | 0.309                         | 53               | -                        | -                 | 41 U                 | 41 U                   | 41 U               | 14 J                       | 13 J                   | 14 J                         | 30 J                       | 16 J                         | 14 J             | 22 J                          | 41 U                 | 41 U             |
| AF96               | JPM3-ITF-AF96(2)          | 19.04                         | 82               | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 40 U                       | 40 U                   | 40 U                         | 40 U                       | 40 U                         | 40 U             | 40 U                          | 40 U                 | 40 U             |
| AF97               | JPM3-ITF-AF97(2)/AF97B(1) | 1.393                         | 147              | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 16 J                       | 17 J                   | 28 J                         | 20 J                       | 14 J                         | 15 J             | 38 U                          | 18 J                 | 38 U             |
| AF98               | JPM3-ITF-AF98(2)          | 6.269                         | <17              | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 38 U                       | 38 U                   | 38 U                         | 38 U                       | 38 U                         | 38 U             | 38 U                          | 38 U                 | 38 U             |
| AF99               | JPM3-ITF-AF99(2)          | 52.73                         | <18              | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 40 U                       | 40 U                   | 40 U                         | 40 U                       | 40 U                         | 40 U             | 40 U                          | 40 U                 | 40 U             |
| AF101              | JPM3-ITF-AF101(2)         | 5.842                         | 58               | -                        | -                 | 41 U                 | 41 U                   | 41 U               | 41 U                       | 41 U                   | 41 U                         | 41 U                       | 41 U                         | 41 U             | 41 U                          | 41 U                 | 41 U             |
| AF102              | JPM3-ITF-AF102(2)         | -2.399                        | 57               | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 40 U                       | 40 U                   | 40 U                         | 40 U                       | 40 U                         | 40 U             | 40 U                          | 40 U                 | 40 U             |



Table 3-11

Confirmation Soil Sample Results  
Site M3 - Flashing Grounds  
Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
Phase 2 Remedial Action  
Joliet Army Ammunition Plant  
Wilmington, Illinois

| Sample Designation | Sample Identification | Test Kit Results <sup>1</sup> | XRF Unit Results | Fixed Laboratory Results |                   |                      |                        |                    |                            |                        |                              |                            |                              |                  |                                |                      |                  |
|--------------------|-----------------------|-------------------------------|------------------|--------------------------|-------------------|----------------------|------------------------|--------------------|----------------------------|------------------------|------------------------------|----------------------------|------------------------------|------------------|--------------------------------|----------------------|------------------|
|                    |                       | 2,4,6-TNT (mg/kg)             | Lead (mg/kg)     | 1,3,5-TNB (mg/kg)        | 2,4,6-TNT (mg/kg) | Acenaphthene (µg/kg) | Acenaphthylene (µg/kg) | Anthracene (µg/kg) | Benzo(a)anthracene (µg/kg) | Benzo(b)pyrene (µg/kg) | Benzo(k)fluoranthene (µg/kg) | Benzo(ghi)perylene (µg/kg) | Benzo(e)fluoranthene (µg/kg) | Chrysene (µg/kg) | Dibenzo(a,h)anthracene (µg/kg) | Fluoranthene (µg/kg) | Fluorane (µg/kg) |
|                    | LRG                   | 200                           | 500              | 17                       | 200               | 98,386,000           | NE                     | 491,930,000        | 17,000                     | 2,000                  | 17,000                       | NE                         | 171,000                      | 1,708,000        | 1,700                          | 65,591,000           | 65,591,000       |
|                    | URG                   | 459                           | 500              | 386                      | 459               | 98,386,000           | NE                     | 491,930,000        | 17,000                     | 2,000                  | 17,000                       | NE                         | 171,000                      | 1,708,000        | 1,700                          | 65,591,000           | 65,591,000       |
| AF103              | JPM3-ITF-AF103(2)     | 0.154                         | 176              | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 20 J                       | 17 J                   | 22 J                         | 17 J                       | 26 J                         | 27 J             | 35 U                           | 34 J                 | 35 U             |
| AF104              | JPM3-ITF-AF104(2)     | 0.619                         | 150              | -                        | -                 | 35 U                 | 35 U                   | 35 U               | 17 J                       | 17 J                   | 26 J                         | 14 J                       | 19 J                         | 27 J             | 35 U                           | 34 J                 | 35 U             |
| AF105              | JPM3-ITF-AF105(2)     | 0.773                         | 26               | -                        | -                 | 39 U                 | 39 U                   | 39 U               | 39 U                       | 39 U                   | 39 U                         | 39 U                       | 39 U                         | 39 U             | 39 U                           | 39 U                 | 39 U             |
| AF106              | JPM3-ITF-AF106(2)     | 0.258                         | <20              | -                        | -                 | 39 U                 | 39 U                   | 14 J               | 48                         | 49                     | 61                           | 35 J                       | 39 J                         | 50               | 39 U                           | 120                  | 8.1 J            |
| AF107              | JPM3-ITF-AF107(2)     | 3.405                         | 87               | -                        | -                 | 55                   | 17 J                   | 150                | 570                        | 620                    | 740                          | 460                        | 600                          | 590              | 110                            | 1,300                | 67               |
| AF110              | JPM3-ITF-AF110(2)     | -0.232                        | 26               | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 38 U                       | 38 U                   | 38 U                         | 38 U                       | 38 U                         | 38 U             | 38 U                           | 38 U                 | 38 U             |
| AF111              | JPM3-ITF-AF111(2)     | -0.462                        | 48               | -                        | -                 | 36 U                 | 36 U                   | 18 J               | 72                         | 75                     | 110                          | 67                         | 53                           | 93               | 21 J                           | 170                  | 36 U             |
| AF113              | JPM3-ITF-AF113(2)     | 0.465                         | 75               | -                        | -                 | 37 U                 | 37 U                   | 37 U               | 40                         | 43                     | 76                           | 56                         | 39                           | 45               | 37 U                           | 54                   | 37 U             |
| AF114              | JPM3-ITF-AF114(2)     | 8.823                         | 38               | -                        | -                 | 39 U                 | 39 U                   | 39 U               | 24 J                       | 23 J                   | 42                           | 30 J                       | 22 J                         | 31 J             | 39 U                           | 46                   | 39 U             |
| AF115              | JPM3-ITF-AF115(2)     | 33.436                        | 36               | -                        | -                 | 36 U                 | 36 U                   | 36 U               | 54                         | 57                     | 100                          | 110                        | 74                           | 110              | 36 U                           | 200                  | 36 U             |
| AF116              | JPM3-ITF-AF116(2)     | 1.964                         | 165              | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 38 U                       | 38 U                   | 19 J                         | 23 J                       | 38 U                         | 38 U             | 38 U                           | 38 U                 | 38 U             |
| AF117              | JPM3-ITF-AF117(2)     | 1.447                         | 26               | -                        | -                 | 37 U                 | 37 U                   | 37 U               | 37 U                       | 37 U                   | 37 U                         | 37 U                       | 37 U                         | 37 U             | 37 U                           | 37 U                 | 37 U             |
| AF118              | JPM3-ITF-AF118(2)     | 1.24                          | 122              | -                        | -                 | 49                   | 36 U                   | 130                | 410                        | 360                    | 500                          | 270                        | 220                          | 460              | 82                             | 1,300                | 69               |
| AF119              | JPM3-ITF-AF119(2)     | 2.088                         | 104              | -                        | -                 | 33 U                 | 33 U                   | 40                 | 130                        | 130                    | 170                          | 110                        | 72                           | 120              | 31 J                           | 300                  | 33 U             |
| AF121              | JPM3-ITF-AF121(2)     | 0.413                         | 39               | -                        | -                 | 45 U                 | 45 U                   | 45 U               | 12 J                       | 18 J                   | 23 J                         | 27 J                       | 45 U                         | 14 J             | 45 U                           | 16 J                 | 45 U             |
| AF122              | JPM3-ITF-AF122(2)     | 2.01                          | 30               | -                        | -                 | 34 U                 | 34 U                   | 34 U               | 59                         | 100                    | 140                          | 91                         | 76                           | 64               | 16 J                           | 81                   | 34 U             |
| AF123              | JPM3-ITF-AF123(2)     | 0.245                         | 23               | -                        | -                 | 36 U                 | 36 U                   | 36 U               | 36 U                       | 36 U                   | 36 U                         | 36 U                       | 36 U                         | 36 U             | 36 U                           | 36 U                 | 36 U             |
| AF124              | JPM3-ITF-AF124(2)     | 0.723                         | 61               | -                        | -                 | 37 U                 | 37 U                   | 37 U               | 37 U                       | 21 J                   | 28 J                         | 24 J                       | 17 J                         | 37 U             | 37 U                           | 27 J                 | 37 U             |
| AF125              | JPM3-ITF-AF125(2)     | 2.708                         | 146              | -                        | -                 | 39 U                 | 39 U                   | 39 U               | 45                         | 45                     | 57                           | 38 J                       | 71                           | 53               | 16 J                           | 41                   | 39 U             |
| AF126              | JPM3-ITF-AF126(2)     | 72.136                        | 142              | -                        | -                 | 39 U                 | 39 U                   | 15 J               | 81                         | 78                     | 98                           | 67                         | 89                           | 110              | 28 J                           | 97                   | 39 U             |
| AF128              | JPM3-ITF-AF128(2)     | -0.773                        | 43               | -                        | -                 | 34 U                 | 34 U                   | 34 U               | 34 U                       | 34 U                   | 14 J                         | 12 J                       | 34 U                         | 7.1 J            | 34 U                           | 8.1 J                | 34 U             |
| AF129              | JPM3-ITF-AF129(2)     | -1.137                        | 54               | -                        | -                 | 39 U                 | 39 U                   | 39 U               | 39 U                       | 11 J                   | 15 J                         | 15 J                       | 39 U                         | 8.1 J            | 39 U                           | 8.8 J                | 39 U             |
| AF130              | JPM3-ITF-AF130(2)     | -0.155                        | <18              | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 38 U                       | 38 U                   | 38 U                         | 38 U                       | 38 U                         | 38 U             | 38 U                           | 38 U                 | 38 U             |
| AF131              | JPM3-ITF-AF131(2)     | -0.192                        | 23               | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 38 U                       | 38 U                   | 38 U                         | 38 U                       | 38 U                         | 38 U             | 38 U                           | 38 U                 | 38 U             |
| AF132              | JPM3-ITF-AF132(2)     | 0.155                         | 45               | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 40 U                       | 40 U                   | 40 U                         | 40 U                       | 40 U                         | 40 U             | 40 U                           | 40 U                 | 40 U             |
| AF133              | JPM3-ITF-AF133(2)     | 7.817                         | 58               | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 40 U                       | 40 U                   | 40 U                         | 40 U                       | 40 U                         | 40 U             | 40 U                           | 40 U                 | 40 U             |
| AF134              | JPM3-ITF-AF134(2)     | 1.602                         | 30               | -                        | -                 | 37 U                 | 37 U                   | 37 U               | 24 J                       | 24 J                   | 36 J                         | 23 J                       | 19 J                         | 29 J             | 37 U                           | 53                   | 37 U             |
| AF135              | JPM3-ITF-AF135(2)     | -0.154                        | 24               | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 38 U                       | 38 U                   | 38 U                         | 38 U                       | 38 U                         | 38 U             | 38 U                           | 38 U                 | 38 U             |
| AF136              | JPM3-ITF-AF136(2)     | 0.31                          | 27               | -                        | -                 | 34 U                 | 34 U                   | 34 U               | 34 U                       | 34 U                   | 34 U                         | 34 U                       | 34 U                         | 34 U             | 34 U                           | 34 U                 | 34 U             |
| AF137              | JPM3-ITF-AF137(2)     | -0.103                        | 47               | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 9.4 J                      | 12 J                   | 20 J                         | 12 J                       | 38 U                         | 14 J             | 38 U                           | 18 J                 | 38 U             |
| AF138              | JPM3-ITF-AF138(2)     | -0.051                        | 58               | -                        | -                 | 36 U                 | 36 U                   | 10 J               | 44                         | 46                     | 64                           | 38                         | 28 J                         | 52               | 11 J                           | 91                   | 36 U             |
| AF139              | JPM3-ITF-AF139(2)     | 0.568                         | 44               | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 38 U                       | 38 U                   | 38 U                         | 38 U                       | 38 U                         | 38 U             | 38 U                           | 38 U                 | 38 U             |
| AF140              | JPM3-ITF-AF140(2)     | -0.503                        | -                | -                        | -                 | 57                   | 41 U                   | 140                | 620                        | 950                    | 1,100                        | 780                        | 460                          | 730              | 220                            | 1,000                | 38 J             |
| AF141              | JPM3-ITF-AF141(2)     | 0.193                         | 94               | -                        | -                 | 36 U                 | 36 U                   | 9.2 J              | 39                         | 52                     | 74                           | 45                         | 37                           | 54               | 12 J                           | 76                   | 36 U             |
| AF142              | JPM3-ITF-AF142(2)     | 0                             | <19              | -                        | -                 | 7.5 J                | 37 U                   | 27 J               | 94                         | 95                     | 140                          | 71                         | 52                           | 120              | 17 J                           | 250                  | 8.2 J            |
| AF143              | JPM3-ITF-AF143(2)     | -1.238                        | 293              | -                        | -                 | 38 U                 | 38 U                   | 18 J               | 81                         | 100                    | 150                          | 86                         | 58                           | 120              | 31 J                           | 180                  | 38 U             |
| AF144              | JPM3-ITF-AF144(2)     | -0.928                        | 60               | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 23 J                       | 28 J                   | 38 J                         | 23 J                       | 19 J                         | 34 J             | 40 U                           | 41                   | 40 U             |
| AF145              | JPM3-ITF-AF145(2)     | 1.24                          | 53               | -                        | -                 | 39 U                 | 39 U                   | 17 J               | 71                         | 73                     | 110                          | 61                         | 57                           | 100              | 22 J                           | 130                  | 39 U             |
| AF146              | JPM3-ITF-AF146(2)     | 7.186                         | 80               | -                        | -                 | 40 U                 | 40 U                   | 11 J               | 19 J                       | 19 J                   | 23 J                         | 14 J                       | 13 J                         | 36 J             | 40 U                           | 50                   | 40 U             |
| AF147              | JPM3-ITF-AF147(2)     | 4.239                         | <19              | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 38 U                       | 38 U                   | 38 U                         | 38 U                       | 38 U                         | 38 U             | 38 U                           | 10 J                 | 38 U             |



Table 3-11

Confirmation Soil Sample Results  
Site M3 - Flashing Grounds  
Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
Phase 2 Remedial Action  
Joliet Army Ammunition Plant  
Wilmington, Illinois

|                    |                       | Test Kit Results <sup>1</sup> | XRF Unit Results | Fixed Laboratory Results |                   |                      |                        |                    |                            |                        |                              |                              |                  |                               |                      |                  |  |
|--------------------|-----------------------|-------------------------------|------------------|--------------------------|-------------------|----------------------|------------------------|--------------------|----------------------------|------------------------|------------------------------|------------------------------|------------------|-------------------------------|----------------------|------------------|--|
| Sample Designation | Sample Identification | 2,4,6-TNT (mg/kg)             | Lead (mg/kg)     | 1,2,5-TNB (mg/kg)        | 2,4,6-TNT (mg/kg) | Acenaphthene (µg/kg) | Acenaphthylene (µg/kg) | Anthracene (µg/kg) | Benzo(a)anthracene (µg/kg) | Benzo(e)pyrene (µg/kg) | Benzo(b)fluoranthene (µg/kg) | Benzo(k)fluoranthene (µg/kg) | Chrysene (µg/kg) | Dibenz(a,h)anthracene (µg/kg) | Fluoranthene (µg/kg) | Fluorene (µg/kg) |  |
|                    | LRG                   | 200                           | 500              | 17                       | 200               | 98,386,000           |                        | 491,930,000        | 17,000                     | 2,000                  | 17,000                       | NE                           | 171,000          | 1,708,000                     | 1,700                | 65,591,000       |  |
|                    | URG                   | 459                           | 500              | 386                      | 459               | 98,386,000           | NE                     | 491,930,000        | 17,000                     | 2,000                  | 17,000                       | NE                           | 171,000          | 1,708,000                     | 1,700                | 65,591,000       |  |
| AF148              | JPM3-ITF-AF148(2)     | -0.362                        | 256              |                          |                   | 40 U                 | 40 U                   | 40 U               | 40 U                       | 16 J                   | 40 U                         | 40 U                         | 12 J             | 40 U                          | 16 J                 | 40 U             |  |
| AF149              | JPM3-ITF-AF149(2)     | -1.08                         | -                |                          |                   | 47 U                 | 47 U                   | 47 U               | 13 J                       | 11 J                   | 13 J                         | 47 U                         | 47 U             | 11 J                          | 47 U                 | 47 U             |  |
| AF150              | JPM3-ITF-AF150(2)     | 0.31                          | -                |                          |                   | 47 U                 | 47 U                   | 47 U               | 47 U                       | 47 U                   | 47 U                         | 47 U                         | 47 U             | 47 U                          | 47 U                 | 47 U             |  |
| AF151              | JPM3-ITF-AF151(2)     | -0.31                         | -                |                          |                   | 42 U                 | 42 U                   | 42 U               | 42 U                       | 42 U                   | 42 U                         | 42 U                         | 42 U             | 42 U                          | 42 U                 | 42 U             |  |
| AF152              | JPM3-ITF-AF152(2)     | -1.702                        | -                |                          |                   | 45 U                 | 45 U                   | 45 U               | 45 U                       | 45 U                   | 45 U                         | 45 U                         | 45 U             | 45 U                          | 8.6 J                | 45 U             |  |
| AF153              | JPM3-ITF-AF153(2)     | 3.405                         | -                |                          |                   | 45 U                 | 45 U                   | 45 U               | 45 U                       | 45 U                   | 45 U                         | 45 U                         | 45 U             | 45 U                          | 45 U                 | 45 U             |  |
| AF154              | JPM3-ITF-AF154(2)     | 5.957                         | -                |                          |                   | 44 U                 | 44 U                   | 44 U               | 44 U                       | 44 U                   | 44 U                         | 44 U                         | 44 U             | 44 U                          | 44 U                 | 44 U             |  |
| AF155              | JPM3-ITF-AF155(2)     | 2.941                         | -                |                          |                   | 45 U                 | 45 U                   | 10 J               | 45 U                       | 45 U                   | 24 J                         | 45 U                         | 45 U             | 45 U                          | 22 J                 | 45 U             |  |
| AF156              | JPM3-ITF-AF156(2)     | -0.541                        | <18              |                          |                   | 44 U                 | 44 U                   | 26 J               | 130                        | 130                    | 190                          | 94                           | 75               | 130                           | 25 J                 | 44 U             |  |
| AF157              | JPM3-ITF-AF157(2)     | -0.982                        | 23               |                          |                   | 40 U                 | 40 U                   | 40 U               | 40 U                       | 40 U                   | 40 U                         | 40 U                         | 40 U             | 40 U                          | 40 U                 | 40 U             |  |
| AF158              | JPM3-ITF-AF158(2)     | -0.619                        | 49               |                          |                   | 44 U                 | 44 U                   | 44 U               | 44 U                       | 8.5 J                  | 13 J                         | 44 U                         | 44 U             | 44 U                          | 13 J                 | 44 U             |  |
| AF159              | JPM3-ITF-AF159(2)     | -1.006                        | 34               |                          |                   | 42 U                 | 42 U                   | 42 U               | 12 J                       | 14 J                   | 21 J                         | 42 U                         | 42 U             | 15 J                          | 42 U                 | 42 U             |  |
| AF160              | JPM3-ITF-AF160(2)     | 1.625                         | 124              |                          |                   | 42 U                 | 42 U                   | 42 U               | 14 J                       | 17 J                   | 27 J                         | 13 J                         | 42 U             | 17 J                          | 27 J                 | 42 U             |  |
| AF161              | JPM3-ITF-AF161(2)     | -0.723                        | 87               |                          |                   | 38 U                 | 38 U                   | 18 J               | 42                         | 30 J                   | 65                           | 20 J                         | 19 J             | 49                            | 38 U                 | 120              |  |
| AF162              | JPM3-ITF-AF162(2)     | -2.223                        | 317              |                          |                   | 120 U                | 120 U                  | 120 U              | 34 J                       | 43 J                   | 69 J                         | 41 J                         | 120 U            | 54 J                          | 57 J                 | 120 U            |  |
| AF163              | JPM3-ITF-AF163(2)     | 3.018                         | 25               |                          |                   | 39 U                 | 39 U                   | 8.7 J              | 44                         | 69                     | 96                           | 50                           | 38 J             | 57                            | 13 J                 | 65               |  |
| AF164              | JPM3-ITF-AF164(2)     | -1.086                        | <18              |                          |                   | 44 U                 | 44 U                   | 44 U               | 44 U                       | 44 U                   | 44 U                         | 44 U                         | 44 U             | 44 U                          | 44 U                 | 44 U             |  |
| AF165              | JPM3-ITF-AF165(2)     | -0.58                         | 21               |                          |                   | 37 U                 | 7.6 J                  | 14 J               | 56                         | 80                     | 120                          | 70                           | 65               | 72                            | 37 U                 | 110              |  |
| AF166              | JPM3-ITF-AF166(2)     | -1.431                        | <19              |                          |                   | 40 U                 | 40 U                   | 40 U               | 40 U                       | 40 U                   | 40 U                         | 40 U                         | 40 U             | 40 U                          | 40 U                 | 40 U             |  |
| AF167              | JPM3-ITF-AF167(2)     | -5.108                        | <17              |                          |                   | 39 U                 | 39 U                   | 39 U               | 9.3 J                      | 39 U                   | 39 U                         | 18 J                         | 39 U             | 17 J                          | 39 U                 | 24 J             |  |
| AF168              | JPM3-ITF-AF168(2)     | -2.94                         | 23               |                          |                   | 370 U                | 370 U                  | 370 U              | 370 U                      | 370 U                  | 370 U                        | 370 U                        | 370 U            | 370 U                         | 370 U                | 370 U            |  |
| AF169              | JPM3-ITF-AF169(2)     | 0                             | <17              |                          |                   | 40 U                 | 40 U                   | 40 U               | 40 U                       | 40 U                   | 40 U                         | 40 U                         | 40 U             | 40 U                          | 13 J                 | 40 U             |  |
| AF170              | JPM3-ITF-AF170(2)     | -0.473                        | 33               |                          |                   | 41 U                 | 41 U                   | 41 U               | 41 U                       | 8.0 J                  | 14 J                         | 41 U                         | 41 U             | 8.9 J                         | 41 U                 | 16 J             |  |
| AF171              | JPM3-ITF-AF171(2)     | -0.619                        | -                |                          |                   | 39 U                 | 11 J                   | 12 J               | 43                         | 50                     | 110                          | 38 J                         | 37 J             | 62                            | 39 U                 | 73               |  |
| AF172              | JPM3-ITF-AF172(2)     | 0.31                          | 54               |                          |                   | 39 U                 | 39 U                   | 39 U               | 17 J                       | 18 J                   | 29 J                         | 14 J                         | 13 J             | 24 J                          | 39 U                 | 37 J             |  |
| AF173              | JPM3-ITF-AF173(2)     | -1.034                        | 157              |                          |                   | 40 U                 | 13 J                   | 14 J               | 40                         | 51                     | 99                           | 36 J                         | 33 J             | 53                            | 11 J                 | 82               |  |
| AF175              | JPM3-ITF-AF175(2)     | -1.446                        | 151              |                          |                   | 12 J                 | 38 J                   | 61                 | 190                        | 220                    | 370                          | 180                          | 110              | 220                           | 43                   | 370              |  |
| AF176              | JPM3-ITF-AF176(2)     | -0.982                        | 35               |                          |                   | 42 U                 | 42 U                   | 42 U               | 42 U                       | 42 U                   | 42 U                         | 42 U                         | 42 U             | 42 U                          | 42 U                 | 42 U             |  |
| AF177              | JPM3-ITF-AF177(2)     | -0.93                         | 32               |                          |                   | 37 U                 | 37 U                   | 8.4 J              | 19 J                       | 21 J                   | 33 J                         | 20 J                         | 12 J             | 23 J                          | 37 U                 | 36 J             |  |
| AF178              | JPM3-ITF-AF178(2)     | -1.395                        | 18               |                          |                   | 43 U                 | 43 U                   | 43 U               | 43 U                       | 43 U                   | 13 J                         | 43 U                         | 43 U             | 43 U                          | 8.7 J                | 43 U             |  |
| AF179              | JPM3-ITF-AF179(2)     | -0.827                        | 23               |                          |                   | 41 U                 | 41 U                   | 41 U               | 31 J                       | 52                     | 65                           | 60                           | 19 J             | 40 J                          | 11 J                 | 30 J             |  |
| AF180              | JPM3-ITF-AF180(2)     | 0.672                         | -                |                          |                   | 45 U                 | 45 U                   | 45 U               | 11 J                       | 16 J                   | 24 J                         | 18 J                         | 13 J             | 15 J                          | 45 U                 | 16 J             |  |
| AF181              | JPM3-ITF-AF181(2)     | 0.103                         | -                |                          |                   | 47 U                 | 29 J                   | 37 J               | 180                        | 220                    | 320                          | 160                          | 150              | 220                           | 48                   | 280              |  |
| AF182              | JPM3-ITF-AF182(2)     | 0.103                         | -                |                          |                   | 44 U                 | 44 U                   | 44 U               | 44 U                       | 44 U                   | 44 U                         | 44 U                         | 44 U             | 44 U                          | 44 U                 | 44 U             |  |
| AF183              | JPM3-ITF-AF183(2)     | 0                             | -                |                          |                   | 43 U                 | 69                     | 47                 | 230                        | 340                    | 490                          | 310                          | 230              | 350                           | 66                   | 280              |  |
| AF184              | JPM3-ITF-AF184(2)     | -0.258                        | -                |                          |                   | 46 U                 | 46 U                   | 46 U               | 46 U                       | 46 U                   | 46 U                         | 46 U                         | 46 U             | 46 U                          | 46 U                 | 46 U             |  |
| AF185              | JPM3-ITF-AF185(2)     | 0.62                          | -                |                          |                   | 47 U                 | 47 U                   | 47 U               | 12 J                       | 19 J                   | 23 J                         | 18 J                         | 47 U             | 19 J                          | 47 U                 | 47 U             |  |
| AF186              | JPM3-ITF-AF186(2)     | 0.1925                        | -                |                          |                   | 45 U                 | 45 U                   | 45 U               | 45 U                       | 45 U                   | 45 U                         | 45 U                         | 45 U             | 45 U                          | 45 U                 | 45 U             |  |
| AF187              | JPM3-ITF-AF187(2)     | -0.851                        | -                |                          |                   | 44 U                 | 44 U                   | 44 U               | 44 U                       | 44 U                   | 44 U                         | 44 U                         | 44 U             | 44 U                          | 44 U                 | 44 U             |  |
| AF188              | JPM3-ITF-AF188(2)     | 0                             | -                |                          |                   | 41 U                 | 41 U                   | 41 U               | 15 J                       | 20 J                   | 33 J                         | 21 J                         | 13 J             | 23 J                          | 41 U                 | 41 U             |  |



Table 3-11

Confirmation Soil Sample Results  
 Site M3 - Flashing Grounds  
 Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
 Phase 2 Remedial Action  
 Joliet Army Ammunition Plant  
 Wilmington, Illinois

|                    |                            | Test Kit Results <sup>1</sup> | XRF Unit Results | Fixed Laboratory Results |                   |                      |                        |                    |                            |                        |                              |                            |                              |                  |                               |                      |                  |
|--------------------|----------------------------|-------------------------------|------------------|--------------------------|-------------------|----------------------|------------------------|--------------------|----------------------------|------------------------|------------------------------|----------------------------|------------------------------|------------------|-------------------------------|----------------------|------------------|
| Sample Designation | Sample Identification      | 2,4,6-TNT (mg/kg)             | Lead (mg/kg)     | 1,2,5-TNB (mg/kg)        | 2,4,6-TNT (mg/kg) | Acesaphthene (µg/kg) | Acesaphthylene (µg/kg) | Anthracene (µg/kg) | Benzo(a)anthracene (µg/kg) | Benzo(b)pyrene (µg/kg) | Benzo(b)fluoranthene (µg/kg) | Benzo(ghi)perylene (µg/kg) | Benzo(k)fluoranthene (µg/kg) | Chrysene (µg/kg) | Dibenz(a,h)anthracene (µg/kg) | Fluoranthene (µg/kg) | Fluorene (µg/kg) |
|                    | LRG                        | 200                           | 500              | 17                       | 200               | 98,386,000           | NE                     | 491,930,000        | 17,000                     | 2,000                  | 17,000                       | NE                         | 171,000                      | 1,708,000        | 1,700                         | 65,591,000           | 65,591,000       |
|                    | URG                        | 459                           | 500              | 386                      | 459               | 98,386,000           | NE                     | 491,930,000        | 17,000                     | 2,000                  | 17,000                       | NE                         | 171,000                      | 1,708,000        | 1,700                         | 65,591,000           | 65,591,000       |
| AF189              | JPM3-ITF-AF189(2)          | -0.309                        | -                | -                        | -                 | 44 U                 | 44 U                   | 44 U               | 9.8 J                      | 11 J                   | 16 J                         | 44 U                       | 44 U                         | 10 J             | 44 U                          | 15 J                 | 44 U             |
| AF190              | JPM3-ITF-AF190(2)          | 0.0773                        | -                | -                        | -                 | 46 U                 | 46 U                   | 46 U               | 14 J                       | 24 J                   | 35 J                         | 26 J                       | 22 J                         | 24 J             | 46 U                          | 20 J                 | 46 U             |
| AF191              | JPM3-ITF-AF191(2)          | 5.76                          | -                | -                        | -                 | 48 U                 | 48 U                   | 48 U               | 48 U                       | 48 U                   | 48 U                         | 48 U                       | 48 U                         | 48 U             | 48 U                          | 48 U                 | 48 U             |
| AF192              | JPM3-ITF-AF192(2)          | 0.193                         | 62               | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 19 J                       | 24 J                   | 22 J                         | 15 J                       | 25 J                         | 22 J             | 10 J                          | 15 J                 | 42 U             |
| AF193              | JPM3-ITF-AF193(2)          | -                             | -                | 0.25 U                   | 0.25 U            | 43 U                 | 43 U                   | 43 U               | 11 J                       | 21 J                   | 25 J                         | 14 J                       | 24 J                         | 14 J             | 11 J                          | 43 U                 | 43 U             |
| AF194              | JPM3-ITF-AF194(2)          | 0.193                         | 48               | -                        | -                 | 43 U                 | 43 U                   | 43 U               | 49                         | 65                     | 96                           | 49                         | 47                           | 63               | 21 J                          | 91                   | 43 U             |
| AF195              | JPM3-ITF-AF195(2)          | -0.638                        | 142              | -                        | -                 | 43 U                 | 43 U                   | 43 U               | 86                         | 110                    | 160                          | 100                        | 88                           | 96               | 27 J                          | 110                  | 43 U             |
| AF196              | JPM3-ITF-AF196(2)          | -0.541                        | <17              | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 42 U                       | 18 J                   | 18 J                         | 17 J                       | 13 J                         | 42 U             | 12 J                          | 42 U                 | 42 U             |
| AF197              | JPM3-ITF-AF197(2)          | -0.038                        | 20               | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 42 U                       | 42 U                   | 42 U                         | 42 U                       | 42 U                         | 42 U             | 42 U                          | 42 U                 | 42 U             |
| AF198              | JPM3-ITF-AF198(2)          | 0.773                         | <19              | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 37 J                       | 41                     | 67                           | 42                         | 23 J                         | 43               | 11 J                          | 64                   | 40 U             |
| AF199              | JPM3-ITF-AF199(2)          | -0.657                        | 28               | -                        | -                 | 41 U                 | 41 U                   | 41 U               | 41 U                       | 41 U                   | 41 U                         | 41 U                       | 41 U                         | 41 U             | 41 U                          | 41 U                 | 41 U             |
| AF200              | JPM3-ITF-AF200(2)          | 0.115                         | -                | -                        | -                 | 44 U                 | 44 U                   | 36 J               | 61                         | 76                     | 120                          | 66                         | 26 J                         | 65               | 26 J                          | 87                   | 44 U             |
| AF201              | JPM3-ITF-AF201(2)          | -0.193                        | -                | -                        | -                 | 44 U                 | 44 U                   | 44 U               | 18 J                       | 22 J                   | 34 J                         | 25 J                       | 17 J                         | 19 J             | 9.4 J                         | 22 J                 | 44 U             |
| AF202              | JPM3-ITF-AF202(2)          | 9.133                         | 24               | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 42 U                       | 13 J                   | 42 U                         | 42 U                       | 42 U                         | 42 U             | 42 U                          | 10 J                 | 42 U             |
| AF204              | JPM3-ITF-AF204(2)          | 13.73                         | 21               | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 13 J                       | 13 J                   | 18 J                         | 15 J                       | 12 J                         | 14 J             | 40 U                          | 15 J                 | 40 U             |
| AF205              | JPM3-ITF-AF205(2)AF205B(1) | 4.102                         | 53               | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 46                         | 50                     | 77                           | 51                         | 42                           | 55               | 11 J                          | 80                   | 38 U             |
| AF206              | JPM3-ITF-AF206(2)          | 1.422                         | 42               | -                        | -                 | 37 U                 | 37 U                   | 37 U               | 37                         | 37                     | 69                           | 38                         | 32 J                         | 50               | 14 J                          | 51                   | 37 U             |
| AF207              | JPM3-ITF-AF207(2)          | 0.0773                        | 101              | -                        | -                 | 30 J                 | 41 U                   | 53                 | 120                        | 110                    | 160                          | 87                         | 66                           | 140              | 31 J                          | 350                  | 25 J             |
| AF208              | JPM3-ITF-AF208(2)AF208B(1) | -0.58                         | 38               | -                        | -                 | 39 U                 | 39 U                   | 39 U               | 39 U                       | 39 U                   | 39 U                         | 39 U                       | 39 U                         | 39 U             | 39 U                          | 39 U                 | 39 U             |
| AF209              | JPM3-ITF-AF209(2)AF209B(1) | 1.499                         | 128              | -                        | -                 | 9.5 J                | 9.9 J                  | 49                 | 280                        | 310                    | 470                          | 290                        | 160                          | 280              | 84                            | 390                  | 11 J             |
| AF211              | JPM3-ITF-AF211(2)          | 0.0517                        | 87               | -                        | -                 | 140                  | 40 U                   | 420                | 1,300                      | 1,100                  | 1,400                        | 860                        | 690                          | 1,200            | 270                           | 2,500                | 130              |
| AF213              | JPM3-ITF-AF213(2)          | -0.155                        | -                | -                        | -                 | 45 U                 | 45 U                   | 45 U               | 45 U                       | 12 J                   | 12 J                         | 45 U                       | 45 U                         | 45 U             | 17 J                          | 45 U                 | 45 U             |
| AF214              | JPM3-ITF-AF214(2)          | -0.258                        | -                | -                        | -                 | 47 U                 | 11 J                   | 47 U               | 47 U                       | 36 J                   | 25 J                         | 240                        | 20 J                         | 47 U             | 190                           | 47 U                 | 47 U             |
| AF215              | JPM3-ITF-AF215(2)AF215B(1) | -3.619                        | -                | -                        | -                 | 46 U                 | 46 U                   | 46 U               | 46 U                       | 46 U                   | 46 U                         | 46 U                       | 46 U                         | 46 U             | 46 U                          | 46 U                 | 46 U             |
| AF216              | JPM3-ITF-AF216(2)          | -0.205                        | -                | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 40 U                       | 40 U                   | 40 U                         | 40 U                       | 40 U                         | 40 U             | 40 U                          | 40 U                 | 40 U             |
| AF217              | JPM3-ITF-AF217(2)          | -0.27                         | -                | -                        | -                 | 47 U                 | 47 U                   | 47 U               | 9.9 J                      | 11 J                   | 17 J                         | 47 U                       | 47 U                         | 13 J             | 47 U                          | 15 J                 | 47 U             |
| AF218              | JPM3-ITF-AF218(2)          | 0.038                         | -                | -                        | -                 | 43 U                 | 43 U                   | 43 U               | 43 U                       | 22 J                   | 24 J                         | 43 U                       | 17 J                         | 43 U             | 13 J                          | 43 U                 | 43 U             |
| AF219              | JPM3-ITF-AF219(2)          | 0                             | -                | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 42 U                       | 42 U                   | 42 U                         | 42 U                       | 42 U                         | 42 U             | 10 J                          | 42 U                 | 42 U             |
| AF220              | JPM3-ITF-AF220(2)          | 0.193                         | -                | -                        | -                 | 18 J                 | 42 U                   | 57                 | 150                        | 140                    | 170                          | 100                        | 140                          | 170              | 52                            | 430                  | 27 J             |
| AF221              | JPM3-ITF-AF221(2)          | 0.463                         | -                | -                        | -                 | 44 U                 | 44 U                   | 44 U               | 44 U                       | 44 U                   | 44 U                         | 44 U                       | 44 U                         | 44 U             | 10 J                          | 10 J                 | 44 U             |
| AF222              | JPM3-ITF-AF222(2)          | 0.116                         | 159              | -                        | -                 | 44 U                 | 44 U                   | 44 U               | 44 U                       | 44 U                   | 44 U                         | 44 U                       | 44 U                         | 44 U             | 44 U                          | 44 U                 | 44 U             |
| AF223              | JPM3-ITF-AF223(2)          | 0.386                         | 173              | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 40 U                       | 40 U                   | 40 U                         | 40 U                       | 40 U                         | 40 U             | 40 U                          | 40 U                 | 40 U             |
| AF224              | JPM3-ITF-AF224(2)          | 24.45                         | 200              | -                        | -                 | 45 U                 | 45 U                   | 45 U               | 45 U                       | 45 U                   | 45 U                         | 45 U                       | 45 U                         | 45 U             | 45 U                          | 45 U                 | 45 U             |
| AF225              | JPM3-ITF-AF225(2)          | -1.16                         | 176              | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 42 U                       | 42 U                   | 42 U                         | 42 U                       | 42 U                         | 42 U             | 42 U                          | 42 U                 | 42 U             |
| AF226              | JPM3-ITF-AF226(2)          | -0.58                         | 146              | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 42 U                       | 42 U                   | 42 U                         | 42 U                       | 42 U                         | 42 U             | 42 U                          | 42 U                 | 42 U             |
| AF227              | JPM3-ITF-AF227(2)AF227B(1) | 96.67                         | 152              | 0.25 U                   | 1.0               | 42 U                 | 42 U                   | 42 U               | 42 U                       | 42 U                   | 42 U                         | 42 U                       | 42 U                         | 42 U             | 42 U                          | 42 U                 | 42 U             |
| AF228              | JPM3-ITF-AF228(2)          | 3.56                          | 125              | -                        | -                 | 43 U                 | 43 U                   | 43 U               | 43 U                       | 43 U                   | 43 U                         | 43 U                       | 43 U                         | 43 U             | 43 U                          | 43 U                 | 43 U             |
| AF229              | JPM3-ITF-AF229(2)          | -1.315                        | 164              | -                        | -                 | 43 U                 | 43 U                   | 43 U               | 25 J                       | 39 J                   | 31 J                         | 19 J                       | 31 J                         | 24 J             | 10 J                          | 51                   | 43 U             |
| AF230              | JPM3-ITF-AF230(2)          | -1.315                        | 123              | -                        | -                 | 44 U                 | 44 U                   | 44 U               | 44 U                       | 44 U                   | 44 U                         | 44 U                       | 44 U                         | 44 U             | 44 U                          | 44 U                 | 44 U             |
| AF231              | JPM3-ITF-AF231(2)          | -0.232                        | -                | -                        | -                 | 42 U                 | 11 J                   | 38 J               | 180                        | 210                    | 180                          | 170                        | 230                          | 180              | 42                            | 350                  | 42 U             |



Table 3-11

**Confirmation Soil Sample Results**  
**Site M3 - Flashing Grounds**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|                    |                       | Test Kit Results <sup>1</sup> | XRF Unit Results | Fixed Laboratory Results |                   |                      |                        |                    |                            |                        |                              |                            |                              |                  |                               |                      |                  |
|--------------------|-----------------------|-------------------------------|------------------|--------------------------|-------------------|----------------------|------------------------|--------------------|----------------------------|------------------------|------------------------------|----------------------------|------------------------------|------------------|-------------------------------|----------------------|------------------|
| Sample Designation | Sample Identification | 2,4,6-TNT (mg/kg)             | Lead (mg/kg)     | 1,3,5-TNB (mg/kg)        | 2,4,6-TNT (mg/kg) | Acenaphthene (μg/kg) | Acenaphthylene (μg/kg) | Anthracene (μg/kg) | Benzo(a)anthracene (μg/kg) | Benzo(b)pyrene (μg/kg) | Benzo(b)fluoranthene (μg/kg) | Benzo(g,h)perylene (μg/kg) | Benzo(k)fluoranthene (μg/kg) | Chrysene (μg/kg) | Dibenz(a,h)anthracene (μg/kg) | Fluoranthene (μg/kg) | Fluorene (μg/kg) |
|                    | LRG                   | 200                           | 500              | 17                       | 200               | 98,386,000           | NE                     | 491,930,000        | 17,000                     | 2,000                  | 17,000                       | NE                         | 171,000                      | 1,708,000        | 1,700                         | 65,591,000           | 65,591,000       |
|                    | URG                   | 459                           | 500              | 386                      | 459               | 98,386,000           | NE                     | 491,930,000        | 17,000                     | 2,000                  | 17,000                       | NE                         | 171,000                      | 1,708,000        | 1,700                         | 65,591,000           | 65,591,000       |
| AF232              | JPM3-ITF-AF232(2)     | 0.348                         | 108              | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 42 U                       | 42 U                   | 42 U                         | 42 U                       | 42 U                         | 42 U             | 42 U                          | 42 U                 | 42 U             |
| AF233              | JPM3-ITF-AF233(2)     | -0.348                        | -                | -                        | -                 | 46 U                 | 46 U                   | 46 U               | 46 U                       | 46 U                   | 46 U                         | 46 U                       | 46 U                         | 46 U             | 46 U                          | 46 U                 | 46 U             |
| AF234              | JPM3-ITF-AF234(2)     | -0.89                         | 119              | -                        | -                 | 44 U                 | 44 U                   | 44 U               | 44 U                       | 44 U                   | 44 U                         | 44 U                       | 44 U                         | 44 U             | 44 U                          | 44 U                 | 44 U             |
| AF235              | JPM3-ITF-AF235(2)     | -1.034                        | 214              | -                        | -                 | 44 U                 | 44 U                   | 44 U               | 21 J                       | 20 J                   | 24 U                         | 20 J                       | 44 U                         | 44 U             | 44 U                          | 37 J                 | 44 U             |
| AF236              | JPM3-ITF-AF236(2)     | 7.6                           | -                | -                        | -                 | 27 J                 | 24 J                   | 110                | 490                        | 440                    | 580                          | 310                        | 310                          | 510              | 100                           | 940                  | 25 J             |
| AF237              | JPM3-ITF-AF237(2)     | -0.568                        | 135              | -                        | -                 | 44 U                 | 44 U                   | 44 U               | 44 U                       | 44 U                   | 44 U                         | 44 U                       | 44 U                         | 44 U             | 44 U                          | 44 U                 | 44 U             |
| AF238              | JPM3-ITF-AF238(2)     | -0.773                        | 103              | -                        | -                 | 44 U                 | 44 U                   | 44 U               | 44 U                       | 44 U                   | 44 U                         | 44 U                       | 44 U                         | 44 U             | 44 U                          | 9.5 J                | 44 U             |
| AF239              | JPM3-ITF-AF239(2)     | -0.696                        | 125              | -                        | -                 | 44 U                 | 44 U                   | 44 U               | 44 U                       | 44 U                   | 44 U                         | 44 U                       | 44 U                         | 44 U             | 44 U                          | 44 U                 | 44 U             |
| AF240              | JPM3-ITF-AF240(2)     | -0.62                         | 101              | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 11 J                       | 11 J                   | 16 J                         | 42 U                       | 42 U                         | 42 U             | 42 U                          | 17 J                 | 42 U             |
| AF241              | JPM3-ITF-AF241(2)     | -0.851                        | 165              | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 11 J                       | 11 J                   | 16 J                         | 42 U                       | 42 U                         | 42 U             | 42 U                          | 18 J                 | 42 U             |
| AF242              | JPM3-ITF-AF242(2)     | -0.103                        | 28               | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 12 J                       | 42 U                   | 15 J                         | 42 U                       | 42 U                         | 42 U             | 42 U                          | 22 J                 | 42 U             |
| AF243              | JPM3-ITF-AF243(2)     | -0.232                        | 32               | -                        | -                 | 44 U                 | 44 U                   | 44 U               | 44 U                       | 44 U                   | 44 U                         | 44 U                       | 44 U                         | 44 U             | 44 U                          | 44 U                 | 44 U             |
| AF244              | JPM3-ITF-AF244(2)     | -0.038                        | 31               | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 42 U                       | 42 U                   | 42 U                         | 42 U                       | 42 U                         | 42 U             | 42 U                          | 12 J                 | 42 U             |
| AF245              | JPM3-ITF-AF245(2)     | -1.354                        | 111              | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 8.5 J                      | 42 U                   | 14 J                         | 42 U                       | 42 U                         | 42 U             | 42 U                          | 18 J                 | 42 U             |
| AF246              | JPM3-ITF-AF246(2)     | 2.791                         | 32               | -                        | -                 | 44 U                 | 44 U                   | 44 U               | 44 U                       | 44 U                   | 44 U                         | 44 U                       | 44 U                         | 44 U             | 44 U                          | 44 U                 | 44 U             |
| AF247              | JPM3-ITF-AF247(2)     | -0.3095                       | 24               | -                        | -                 | 43 U                 | 43 U                   | 43 U               | 43 U                       | 43 U                   | 43 U                         | 43 U                       | 43 U                         | 43 U             | 43 U                          | 43 U                 | 43 U             |
| AF248              | JPM3-ITF-AF248(2)     | -                             | 29               | -                        | -                 | -                    | -                      | -                  | -                          | -                      | -                            | -                          | -                            | -                | -                             | -                    | -                |
| AF249              | JPM3-ITF-AF249(3)     | -                             | -                | 0.25 U                   | 0.25 U            | 44 U                 | 44 U                   | 44 U               | 44 U                       | 10 J                   | 15 J                         | 44 U                       | 44 U                         | 11 J             | 44 U                          | 13 J                 | 44 U             |
| AF250              | JPM3-ITF-AF250(3)     | -                             | -                | 0.25 U                   | 0.25 U            | 43 U                 | 15 J                   | 36 J               | 170                        | 160                    | 220                          | 140                        | 120                          | 180              | 46                            | 270                  | 43 U             |
| AF251              | JPM3-ITF-AF251(3)     | -                             | -                | 0.25 U                   | 0.25 U            | 41 U                 | 41 U                   | 41 U               | 16 J                       | 24 J                   | 36 J                         | 19 J                       | 15 J                         | 23 J             | 9.4 J                         | 25 J                 | 41 U             |
| AF252              | JPM3-ITF-AF252(3)     | -                             | -                | 0.25 U                   | 0.25 U            | 63                   | 22 J                   | 380                | 1,500                      | 120                    | 1,300                        | 830                        | 720                          | 1,500            | 340                           | 2,300                | 43               |
| AF253              | JPM3-ITF-AF253(3)     | -                             | -                | 0.25 U                   | 2.3               | 10 J                 | 47                     | 71                 | 260                        | 300                    | 440                          | 220                        | 230                          | 310              | 59                            | 320                  | 47 U             |
| AF254              | JPM3-ITF-AF254(3)     | -                             | -                | 0.25 U                   | 11                | 10 J                 | 16 J                   | 46 J               | 210                        | 220                    | 270                          | 170                        | 170                          | 230              | 68                            | 340                  | 48 U             |
| AF255              | JPM3-ITF-AF255(2)     | -                             | -                | 0.25 U                   | 0.25 U            | 44 U                 | 44 U                   | 44 U               | 44 U                       | 44 U                   | 44 U                         | 44 U                       | 44 U                         | 44 U             | 44 U                          | 44 U                 | 44 U             |
| AF256              | JPM3-ITF-AF256(2)     | -                             | -                | 0.25 U                   | 0.25 U            | 44 U                 | 44 U                   | 44 U               | 44 U                       | 44 U                   | 44 U                         | 44 U                       | 44 U                         | 44 U             | 44 U                          | 44 U                 | 44 U             |
| AF257              | JPM3-ITF-AF257(2)     | -1.27                         | 19               | -                        | -                 | 45 U                 | 45 U                   | 45 U               | 45 U                       | 45 U                   | 45 U                         | 45 U                       | 45 U                         | 45 U             | 45 U                          | 45 U                 | 45 U             |
| AF258              | JPM3-ITF-AF258(2)     | -0.309                        | <17              | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 42 U                       | 42 U                   | 42 U                         | 42 U                       | 42 U                         | 42 U             | 42 U                          | 42 U                 | 42 U             |
| AF259              | JPM3-ITF-AF259(2)     | -0.502                        | -                | -                        | -                 | 41 U                 | 41 U                   | 41 U               | 41 U                       | 41 U                   | 41 U                         | 41 U                       | 41 U                         | 41 U             | 41 U                          | 41 U                 | 41 U             |
| AF260              | JPM3-ITF-AF260(2)     | -0.502                        | -                | -                        | -                 | 48 U                 | 48 U                   | 48 U               | 16 J                       | 16 J                   | 24 J                         | 21 J                       | 18 J                         | 18 J             | 48 U                          | 19 J                 | 48 U             |
| AP2                | JPM3-ITF-AP2(1)       | 3.101                         | -                | -                        | -                 | 37 U                 | 37 U                   | 12 J               | 130                        | 120                    | 170                          | 110                        | 69                           | 150              | 28 J                          | 170                  | 37 U             |
| AP3                | JPM3-ITF-AP3(1)       | 1.549                         | -                | -                        | -                 | 34 U                 | 34 U                   | 34 U               | 32 J                       | 20 J                   | 29 J                         | 23 J                       | 19 J                         | 28 J             | 34 U                          | 31 J                 | 34 U             |
| AP4                | JPM3-ITF-AP4(1)       | 6.152                         | -                | -                        | -                 | 39 U                 | 39 U                   | 11 J               | 86                         | 69                     | 110                          | 63                         | 36 J                         | 110              | 19 J                          | 140                  | 39 U             |
| AP8                | JPM3-ITF-AP8(1)       | 0.5686                        | 391              | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 40 U                       | 40 U                   | 40 U                         | 40 U                       | 40 U                         | 23 J             | 40 U                          | 29 J                 | 40 U             |
| AP12               | JPM3-ITF-AP12(1)      | 0.103                         | 39               | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 42 U                       | 42 U                   | 42 U                         | 42 U                       | 42 U                         | 42 U             | 42 U                          | 42 U                 | 42 U             |
| AP13               | JPM3-ITF-AP13(1)      | -0.309                        | 108              | -                        | -                 | 37 U                 | 37 U                   | 37 U               | 37 U                       | 37 U                   | 37 U                         | 37 U                       | 37 U                         | 19 J             | 37 U                          | 25 J                 | 37 U             |
| AP14               | JPM3-ITF-AP14(1)      | 0.464                         | 74               | -                        | -                 | 39 U                 | 39 U                   | 39 U               | 39 U                       | 39 U                   | 39 U                         | 39 U                       | 39 U                         | 19 J             | 39 U                          | 24 J                 | 39 U             |
| AP15               | JPM3-ITF-AP15(1)      | 1.292                         | 30               | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 40 U                       | 40 U                   | 40 U                         | 40 U                       | 40 U                         | 40 U             | 40 U                          | 40 U                 | 40 U             |
| AP17               | JPM3-ITF-AP17(1)      | 2.792                         | 31               | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 38 U                       | 38 U                   | 38 U                         | 38 U                       | 38 U                         | 38 U             | 38 U                          | 38 U                 | 38 U             |
| AP18               | JPM3-ITF-AP18(1)      | 2.399                         | 53               | -                        | -                 | 36 J                 | 40 U                   | 88                 | 280                        | 330                    | 320                          | 280                        | 320                          | 330              | 100                           | 540                  | 40               |
| AP21               | JPM3-ITF-AP21(1)      | 0.827                         | 263              | -                        | -                 | 42 U                 | 8.5 J                  | 20 J               | 100                        | 130                    | 180                          | 110                        | 150                          | 170              | 42 J                          | 220                  | 42 U             |



Table 3-11

Confirmation Soil Sample Results  
 Site M3 - Flashing Grounds  
 Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
 Phase 2 Remedial Action  
 Joliet Army Ammunition Plant  
 Wilmington, Illinois

|                    |                       | Test Kit Results <sup>1</sup> | XRF Unit Results | Fixed Laboratory Results |                   |                      |                        |                    |                            |                        |                              |                            |                              |                  |                               |                      |                  |
|--------------------|-----------------------|-------------------------------|------------------|--------------------------|-------------------|----------------------|------------------------|--------------------|----------------------------|------------------------|------------------------------|----------------------------|------------------------------|------------------|-------------------------------|----------------------|------------------|
| Sample Designation | Sample Identification | 2,4,6-TNT (mg/kg)             | Lead (mg/kg)     | 1,2,5-TNB (mg/kg)        | 2,4,6-TNT (mg/kg) | Acenaphthene (µg/kg) | Acenaphthylene (µg/kg) | Anthracene (µg/kg) | Benzo(a)anthracene (µg/kg) | Benzo(b)pyrene (µg/kg) | Benzo(k)fluoranthene (µg/kg) | Benzo(ghi)perylene (µg/kg) | Benzo(x)fluoranthene (µg/kg) | Chrysene (µg/kg) | Dibenz(a,h)anthracene (µg/kg) | Fluoranthene (µg/kg) | Fluorene (µg/kg) |
|                    | LRG                   | 200                           | 500              | 17                       | 200               | 98,386,000           | NE                     | 491,930,000        | 17,000                     | 2,000                  | 17,000                       | NE                         | 171,000                      | 1,708,000        | 1,700                         | 65,591,000           | 65,591,000       |
|                    | URG                   | 459                           | 500              | 386                      | 459               | 98,386,000           | NE                     | 491,930,000        | 17,000                     | 2,000                  | 17,000                       | NE                         | 171,000                      | 1,708,000        | 1,700                         | 65,591,000           | 65,591,000       |
| AP23               | JPM3-ITF-AP23(1)      | 42.26                         | 55               | -                        | -                 | 41 U                 | 41 U                   | 41 U               | 41 U                       | 41 U                   | 41 U                         | 34 J                       | 41 U                         | 41 U             | 24 J                          | 41 U                 | 41 U             |
| AP24               | JPM3-ITF-AP24(1)      | -1.238                        | 60               | -                        | -                 | 39 U                 | 39 U                   | 39 U               | 39 U                       | 39 U                   | 39 U                         | 39 U                       | 39 U                         | 39 U             | 39 U                          | 12 J                 | 39 U             |
| AP25               | JPM3-ITF-AP25(1)      | 0.62                          | 28               | -                        | -                 | 41 U                 | 41 U                   | 41 U               | 41 U                       | 41 U                   | 41 U                         | 41 U                       | 41 U                         | 41 U             | 41 U                          | 41 U                 | 41 U             |
| AP26               | JPM3-ITF-AP26(1)      | 0                             | <17              | -                        | -                 | 41 U                 | 41 U                   | 41 U               | 41 U                       | 41 U                   | 41 U                         | 41 U                       | 41 U                         | 41 U             | 41 U                          | 41 U                 | 41 U             |
| AP27               | JPM3-ITF-AP27(1)      | 0.414                         | <19              | -                        | -                 | 39 U                 | 39 U                   | 39 U               | 39 U                       | 39 U                   | 39 U                         | 39 U                       | 39 U                         | 39 U             | 39 U                          | 39 U                 | 39 U             |
| AP28               | JPM3-ITF-AP28(1)      | 0.672                         | 30               | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 38 U                       | 38 U                   | 38 U                         | 38 U                       | 38 U                         | 38 U             | 38 U                          | 38 U                 | 38 U             |
| AP29               | JPM3-ITF-AP29(1)      | 0.414                         | <19              | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 40 U                       | 40 U                   | 40 U                         | 40 U                       | 40 U                         | 40 U             | 40 U                          | 40 U                 | 40 U             |
| AP30               | JPM3-ITF-AP30(1)      | 2.119                         | 62               | -                        | -                 | 44 U                 | 44 U                   | 44 U               | 44 U                       | 44 U                   | 44 U                         | 44 U                       | 44 U                         | 44 U             | 44 U                          | 16 J                 | 44 U             |
| AP31               | JPM3-ITF-AP31(1)      | 5.105                         | 100              | -                        | -                 | 46 U                 | 46 U                   | 46 U               | 46 U                       | 46 U                   | 46 U                         | 46 U                       | 46 U                         | 9.7 J            | 46 U                          | 12 J                 | 46 U             |
| AP32               | JPM3-ITF-AP32(1)      | 1.344                         | 126              | -                        | -                 | 41 U                 | 41 U                   | 41 U               | 41 U                       | 41 U                   | 10 J                         | 41 U                       | 41 U                         | 12 J             | 41 U                          | 10 J                 | 41 U             |
| AP33               | JPM3-ITF-AP33(1)      | 2.708                         | 216              | -                        | -                 | 41 U                 | 41 U                   | 41 U               | 25 J                       | 33 J                   | 52                           | 26 J                       | 29 J                         | 42               | 11 J                          | 57                   | 41 U             |
| AP36               | JPM3-ITF-AP36(1)      | 0                             | 64               | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 21 J                       | 28 J                   | 42 J                         | 29 J                       | 22 J                         | 31 J             | 13 J                          | 40 J                 | 42 U             |
| AP37               | JPM3-ITF-AP37(1)      | 0.154                         | 23               | -                        | -                 | 42 U                 | 10 J                   | 9.2 J              | 14 J                       | 25 J                   | 46                           | 37 J                       | 21 J                         | 28 J             | 12 J                          | 28 J                 | 42 U             |
| AP38               | JPM3-ITF-AP38(1)      | 0.982                         | 32               | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 42 U                       | 42 U                   | 16 J                         | 42 U                       | 42 U                         | 14 J             | 42 U                          | 18 J                 | 42 U             |
| AP46               | JPM3-ITF-AP46(1)      | 20.743                        | 234              | -                        | -                 | 380 U                | 380 U                  | 380 U              | 380 U                      | 380 U                  | 380 U                        | 380 U                      | 380 U                        | 380 U            | 380 U                         | 380 U                | 380 U            |
| AP47               | JPM3-ITF-AP47(1)      | 3.25                          | -                | -                        | -                 | 36 U                 | 36 U                   | 12 J               | 36 U                       | 96                     | 67                           | 50                         | 48                           | 83               | 36 U                          | 64                   | 36 U             |
| AP50               | JPM3-ITF-AP50(1)      | -0.413                        | 77               | -                        | -                 | 36 U                 | 36 U                   | 36 U               | 50                         | 48                     | 84                           | 41                         | 54                           | 65               | 36 U                          | 95                   | 36 U             |
| AP56               | JPM3-ITF-AP56(1)      | -0.619                        | 348              | -                        | -                 | 690 U                | 690 U                  | 690 U              | 690 U                      | 690 U                  | 690 U                        | 690 U                      | 690 U                        | 690 U            | 690 U                         | 690 U                | 690 U            |
| AP57               | JPM3-ITF-AP57(1)      | 2.631                         | 278              | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 30 J                       | 38 U                   | 57                           | 40                         | 24 J                         | 42               | 38 U                          | 50                   | 38 U             |
| AP63               | JPM3-ITF-AP63(1)      | 0.386                         | 175              | -                        | -                 | 73                   | 27 J                   | 200                | 1,000                      | 1,000                  | 1,300                        | 750                        | 870                          | 980              | 340                           | 2,200                | 69               |
| AP66               | JPM3-ITF-AP66(1)      | 1.913                         | 69               | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 43                         | 45                     | 73                           | 44                         | 33 J                         | 45               | 12 J                          | 60                   | 40 U             |
| AP67               | JPM3-ITF-AP67(1)      | -0.541                        | 79               | -                        | -                 | 38 U                 | 38 U                   | 38 U               | 18 J                       | 20 J                   | 30 J                         | 22 J                       | 16 J                         | 32 J             | 7.8 J                         | 40                   | 38 U             |
| AP68               | JPM3-ITF-AP68(1)      | 0.386                         | 368              | -                        | -                 | 11 J                 | 13 J                   | 32 J               | 190                        | 190                    | 350                          | 170                        | 200                          | 350              | 44                            | 370                  | 8.4 J            |
| AP69               | JPM3-ITF-AP69(1)      | -0.257                        | 39               | -                        | -                 | 43                   | 41 U                   | 120                | 340                        | 330                    | 460                          | 240                        | 170                          | 410              | 65                            | 890                  | 45               |
| AP70               | JPM3-ITF-AP70(1)      | 0.413                         | 130              | -                        | -                 | 89                   | 8.1 J                  | 230                | 660                        | 670                    | 1,000                        | 530                        | 450                          | 820              | 150                           | 1,700                | 86               |
| AP71               | JPM3-ITF-AP71(1)      | -0.387                        | 77               | -                        | -                 | 36 U                 | 36 U                   | 36 U               | 8.7 J                      | 36 U                   | 18 J                         | 15 J                       | 36 U                         | 15 J             | 36 U                          | 13 J                 | 36 U             |
| AP72               | JPM3-ITF-AP72(1)      | -0.464                        | 101              | -                        | -                 | 39 U                 | 39 U                   | 39 U               | 39 U                       | 39 U                   | 19 J                         | 39 U                       | 39 U                         | 39 U             | 39 U                          | 14 J                 | 39 U             |
| AP73               | JPM3-ITF-AP73(1)      | 2.585                         | -                | -                        | -                 | 45 U                 | 45 U                   | 45 U               | 16 J                       | 19 J                   | 46                           | 25 J                       | 15 J                         | 28 J             | 45 U                          | 32 J                 | 45 U             |
| AP74               | JPM3-ITF-AP74(1)      | 2.78                          | -                | -                        | -                 | 220 U                | 220 U                  | 220 U              | 220 U                      | 220 U                  | 220 U                        | 220 U                      | 220 U                        | 220 U            | 220 U                         | 43 J                 | 220 U            |
| AP77               | JPM3-ITF-AP77(1)      | 2.79                          | 167              | -                        | -                 | 40 U                 | 40 U                   | 16 J               | 46                         | 47                     | 46                           | 33 J                       | 40 U                         | 40 U             | 40 U                          | 120                  | 40 U             |
| AP78               | JPM3-ITF-AP78(1)      | 3.722                         | 46               | -                        | -                 | 42 U                 | 42 U                   | 42 U               | 42 U                       | 42 U                   | 42 U                         | 42 U                       | 42 U                         | 42 U             | 42 U                          | 12 J                 | 42 U             |
| AP80               | JPM3-ITF-AP80(1)      | 1.54                          | 384              | -                        | -                 | 10 J                 | 18 J                   | 43                 | 110                        | 130                    | 220                          | 150                        | 75                           | 150              | 44                            | 200                  | 10 J             |
| AP81               | JPM3-ITF-AP81(1)      | 0.586                         | -                | -                        | -                 | 46 U                 | 46 U                   | 46 U               | 10 J                       | 14 J                   | 24 J                         | 16 J                       | 46 U                         | 20 J             | 46 U                          | 23 J                 | 46 U             |
| AP83               | JPM3-ITF-AP83(1)      | 1.896                         | -                | -                        | -                 | 42 U                 | 42 U                   | 12 J               | 84                         | 83                     | 150                          | 69                         | 34 J                         | 110              | 13 J                          | 160                  | 42 U             |
| AP85               | JPM3-ITF-AP85(1)      | 1.664                         | 121              | -                        | -                 | 45 U                 | 16 J                   | 24 J               | 110                        | 140                    | 260                          | 140                        | 110                          | 170              | 47                            | 190                  | 45 U             |
| AP86               | JPM3-ITF-AP86(1)      | 1.277                         | <18              | -                        | -                 | 45 U                 | 45 U                   | 45 U               | 19 J                       | 20 J                   | 34 J                         | 15 J                       | 15 J                         | 25 J             | 45 U                          | 17 J                 | 45 U             |
| AP87               | JPM3-ITF-AP87(1)      | 0.774                         | 165              | -                        | -                 | 40 U                 | 40 U                   | 16 J               | 80                         | 96                     | 170                          | 100                        | 74                           | 130              | 20 J                          | 130                  | 40 U             |
| AP88               | JPM3-ITF-AP88(1)      | 1.547                         | 250              | -                        | -                 | 42 U                 | 42 U                   | 9.5 J              | 59                         | 71                     | 120                          | 75                         | 60                           | 95               | 17 J                          | 110                  | 42 U             |
| AP89               | JPM3-ITF-AP89(1)      | 1.238                         | 269              | -                        | -                 | 74                   | 11 J                   | 190                | 740                        | 640                    | 1,100                        | 510                        | 370                          | 890              | 180                           | 1,800                | 87               |
| AP90               | JPM3-ITF-AP90(1)      | 2.399                         | -                | -                        | -                 | 12 J                 | 44 U                   | 91                 | 610                        | 660                    | 800                          | 49                         | 720                          | 740              | 170                           | 1,200                | 17 J             |



Table 3-11

Confirmation Soil Sample Results  
 Site M3 - Flashing Grounds  
 Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
 Phase 2 Remedial Action  
 Joliet Army Ammunition Plant  
 Wilmington, Illinois

|                    |                       | Test Kit Results <sup>1</sup> | XRF Unit Results | Fixed Laboratory Results |                   |                      |                        |                    |                            |                        |                              |                              |                              |                  |                                |                      |                  |
|--------------------|-----------------------|-------------------------------|------------------|--------------------------|-------------------|----------------------|------------------------|--------------------|----------------------------|------------------------|------------------------------|------------------------------|------------------------------|------------------|--------------------------------|----------------------|------------------|
| Sample Designation | Sample Identification | 2,4,6-TNT (mg/kg)             | Lead (mg/kg)     | 1,3,5-TNB (mg/kg)        | 2,4,6-TNT (mg/kg) | Acenaphthene (µg/kg) | Acenaphthylene (µg/kg) | Anthracene (µg/kg) | Benzo(a)anthracene (µg/kg) | Benzo(b)pyrene (µg/kg) | Benzo(k)fluoranthene (µg/kg) | Benzo(g,h,i)perylene (µg/kg) | Benzo(l)fluoranthene (µg/kg) | Chrysene (µg/kg) | Dibenzo(a,b)anthracene (µg/kg) | Fluoranthene (µg/kg) | Fluorene (µg/kg) |
|                    | LRG                   | 200                           | 500              | 17                       | 200               | 98,386,000           | NE                     | 491,930,000        | 17,000                     | 2,000                  | 17,000                       | NE                           | 171,000                      | 1,708,000        | 1,700                          | 65,591,000           | 65,591,000       |
|                    | URG                   | 459                           | 500              | 386                      | 459               | 98,386,000           | NE                     | 491,930,000        | 17,000                     | 2,000                  | 17,000                       | NE                           | 171,000                      | 1,708,000        | 1,700                          | 65,591,000           | 65,591,000       |
| AP91               | JPM3-ITF-AP91(1)      | 0.103                         | -                | -                        | -                 | 10 J                 | 45 U                   | 49                 | 240                        | 290                    | 410                          | 250                          | 220                          | 330              | 67                             | 540                  | 13 J             |
| AP92               | JPM3-ITF-AP92(2)      | -1.16                         | 113              | -                        | -                 | 41 U                 | 41 U                   | 41 U               | 28 J                       | 31 J                   | 42                           | 32 J                         | 25 J                         | 23 J             | 11 J                           | 47                   | 41 U             |
| AP93               | JPM3-ITF-AP93(2)      | -1.238                        | 162              | -                        | -                 | 40 U                 | 40 U                   | 40 U               | 12 J                       | 15 J                   | 25 J                         | 19 J                         | 14 J                         | 9.0 J            | 40 U                           | 25 J                 | 40 U             |
| AP94               | JPM3-ITF-AP94(1)      | -                             | 49               | -                        | -                 | -                    | -                      | -                  | -                          | -                      | -                            | -                            | -                            | -                | -                              | -                    | -                |
| AP96               | JPM3-ITF-AP96(1)      | -                             | 29               | -                        | -                 | -                    | -                      | -                  | -                          | -                      | -                            | -                            | -                            | -                | -                              | -                    | -                |
| AP97               | JPM3-ITF-AP97(1)      | -                             | 26               | -                        | -                 | -                    | -                      | -                  | -                          | -                      | -                            | -                            | -                            | -                | -                              | -                    | -                |
| AP98               | JPM3-ITF-AP98(1)      | -                             | -                | 0.25 U                   | 0.25 U            | 46 U                 | 46 U                   | 46 U               | 36 J                       | 36 J                   | 46 J                         | 31 J                         | 30 J                         | 44 J             | 14 J                           | 58                   | 46 U             |
| AP99               | JPM3-ITF-AP99(1)      | -                             | -                | 0.25 U                   | 0.25 U            | 44 U                 | 44 U                   | 14 J               | 85                         | 86                     | 140                          | 84                           | 61                           | 120              | 33 J                           | 150                  | 44 U             |
| AP100              | JPM3-ITF-AP100(1)     | -0.1925                       | 22               | -                        | -                 | 43 U                 | 43 U                   | 43 U               | 25 J                       | 33 J                   | 33 J                         | 35 J                         | 31 J                         | 40 J             | 43 U                           | 76                   | 43 U             |
| AP101              | JPM3-ITF-AP101(1)     | -0.58                         | <17              | -                        | -                 | 46 U                 | 46 U                   | 46 U               | 46 U                       | 46 U                   | 46 U                         | 11 J                         | 46 U                         | 46 U             | 46 U                           | 18 J                 | 46 U             |
| AP102              | JPM3-ITF-AP102(1)     | -0.774                        | 43               | -                        | -                 | 46 U                 | 46 U                   | 46 U               | 21 J                       | 20 J                   | 20 J                         | 26 J                         | 24 J                         | 26 J             | 46 U                           | 44 J                 | 22 J             |
| AP103              | JPM3-ITF-AP103(1)     | 0.1547                        | <15              | -                        | -                 | 48 U                 | 48 U                   | 48 U               | 48 U                       | 48 U                   | 48 U                         | 48 U                         | 48 U                         | 48 U             | 48 U                           | 48 U                 | 48 U             |
| CR-AP1             | JPM3-CR-AP1(0.5)      | -                             | -                | -                        | -                 | -                    | -                      | -                  | -                          | -                      | -                            | -                            | -                            | -                | -                              | -                    | -                |
| CR-AP2             | JPM3-CR-AP2(0.5)      | -                             | -                | -                        | -                 | -                    | -                      | -                  | -                          | -                      | -                            | -                            | -                            | -                | -                              | -                    | -                |
| CR-AP3             | JPM3-CR-AP3(0.5)      | -                             | -                | -                        | -                 | -                    | -                      | -                  | -                          | -                      | -                            | -                            | -                            | -                | -                              | -                    | -                |
| CR-AP4             | JPM3-CR-AP4(0.5)      | -                             | -                | -                        | -                 | -                    | -                      | -                  | -                          | -                      | -                            | -                            | -                            | -                | -                              | -                    | -                |
| CR-AF1             | JPM3-CR-AF1(2)        | -                             | -                | -                        | -                 | -                    | -                      | -                  | -                          | -                      | -                            | -                            | -                            | -                | -                              | -                    | -                |
| OTF-AF7            | JPM3-OTF-AF7(2)       | -                             | <21              | -                        | -                 | -                    | -                      | -                  | -                          | -                      | -                            | -                            | -                            | -                | -                              | -                    | -                |
| OTF-AF8            | JPM3-OTF-AF8(2)       | -                             | 27               | -                        | -                 | -                    | -                      | -                  | -                          | -                      | -                            | -                            | -                            | -                | -                              | -                    | -                |
| OTF-AF9            | JPM3-OTF-AF9(2)       | -                             | 39               | -                        | -                 | -                    | -                      | -                  | -                          | -                      | -                            | -                            | -                            | -                | -                              | -                    | -                |
| OTF-AP19           | JPM3-OTF-AP19(1)      | -                             | 21               | -                        | -                 | -                    | -                      | -                  | -                          | -                      | -                            | -                            | -                            | -                | -                              | -                    | -                |
| OTF-AP20           | JPM3-OTF-AP20(1)      | -                             | 63               | -                        | -                 | -                    | -                      | -                  | -                          | -                      | -                            | -                            | -                            | -                | -                              | -                    | -                |
| OTF-AP21           | JPM3-OTF-AP21(1)      | -                             | 20               | -                        | -                 | -                    | -                      | -                  | -                          | -                      | -                            | -                            | -                            | -                | -                              | -                    | -                |



Table 3-11

Confirmation Soil Sample Results  
 Site M3 - Flashing Grounds  
 Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
 Phase 2 Remedial Action  
 Joliet Army Ammunition Plant  
 Wilmington, Illinois

|                    |                           | Fixed Laboratory Results       |                     |                      |                |                 |                 |                    |                 |                |                  |                |              |                |                  |              |
|--------------------|---------------------------|--------------------------------|---------------------|----------------------|----------------|-----------------|-----------------|--------------------|-----------------|----------------|------------------|----------------|--------------|----------------|------------------|--------------|
| Sample Designation | Sample Identification     | Indeno(1,2,3-cd)pyrene (µg/kg) | Naphthalene (µg/kg) | Phenanthrene (µg/kg) | Pyrene (µg/kg) | TPH-DRO (mg/kg) | TPH-GRO (mg/kg) | Anthracene (mg/kg) | Arsenic (mg/kg) | Barium (mg/kg) | Chromium (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Silver (mg/kg) | Thallium (mg/kg) | Zinc (mg/kg) |
|                    | LRG                       | 17,000                         | 32,793,000          | NE                   | 49,193,000     | 2,500           | 2,500           | 50                 | 21              | 625            | 213              | 190            | 500          | 16             | 0.64             | 720          |
|                    | URG                       | 17,000                         | 32,793,000          | NE                   | 49,193,000     | 2,500           | 2,500           | 757                | 84              | 1,950          | 213              | 925            | 500          | 9467           | 86               | 2,500        |
| AF1                | JPM3-ITF-AF1(2)           | 22 J                           | 36 U                | 36 U                 | 36 U           | -               | -               | -                  | -               | -              | -                | -              | 18           | -              | -                | -            |
| AF6                | JPM3-ITF-AF6(2)           | 8.6 J                          | 38 U                | 38 U                 | 38 U           | -               | -               | -                  | -               | -              | -                | -              | 17           | -              | -                | -            |
| AF7                | JPM3-ITF-AF7(2)           | 20 J                           | 39 U                | 39 U                 | 39 U           | -               | -               | -                  | -               | -              | -                | -              | 18           | -              | -                | -            |
| AF8                | JPM3-ITF-AF8(2)           | 21 J                           | 40 U                | 40 U                 | 23 J           | -               | -               | -                  | -               | -              | -                | -              | 17           | -              | -                | -            |
| AF9                | JPM3-ITF-AF9(2)           | 39 U                           | 39 U                | 39 U                 | 39 U           | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |
| AF10               | JPM3-ITF-AF10(2)          | 42 U                           | 42 U                | 42 U                 | 42 U           | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |
| AF12               | JPM3-ITF-AF12(2)          | 41 U                           | 41 U                | 41 U                 | 41 U           | -               | -               | -                  | 8.9             | -              | -                | 27             | -            | -              | -                | 58           |
| AF15               | JPM3-ITF-AF15(2)          | 41 U                           | 41 U                | 41 U                 | 41 U           | -               | -               | -                  | 7.5             | -              | -                | 26             | -            | -              | -                | 89           |
| AF16               | JPM3-ITF-AF16(2)          | 41 U                           | 41 U                | 41 U                 | 41 U           | -               | -               | -                  | 12              | -              | -                | 23             | -            | -              | -                | 67           |
| AF17               | JPM3-ITF-AF17(2)          | 41 U                           | 41 U                | 41 U                 | 41 U           | -               | -               | -                  | 9.7             | -              | -                | 24             | -            | -              | -                | 76           |
| AF28               | JPM3-ITF-AF28(2)          | 35 U                           | 35 U                | 35 U                 | 35 U           | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |
| AF29               | JPM3-ITF-AF29(2)          | 39 U                           | 39 U                | 39 U                 | 39 U           | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |
| AF30               | JPM3-ITF-AF30(2)          | 1,000                          | 42 U                | 460                  | 2,600          | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |
| AF31               | JPM3-ITF-AF31(2)          | 40 U                           | 40 U                | 40 U                 | 19 J           | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |
| AF32               | JPM3-ITF-AF32(2)          | 39 U                           | 39 U                | 39 U                 | 39 U           | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |
| AF33               | JPM3-ITF-AF33(2)          | 16 J                           | 37 U                | 12 J                 | 37 J           | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |
| AF34               | JPM3-ITF-AF34(2)          | 37 U                           | 37 U                | 37 U                 | 37 U           | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |
| AF35               | JPM3-ITF-AF35(2)          | 28 J                           | 42 U                | 42 U                 | 20 J           | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |
| AF36               | JPM3-ITF-AF36(3)          | 41 U                           | 41 U                | 41 U                 | 41 U           | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |
| AF37               | JPM3-ITF-AF37(3)/AF37B(1) | 37 U                           | 37 U                | 37 U                 | 37 U           | -               | -               | -                  | 8.5             | -              | -                | 20             | -            | -              | -                | 63           |
| AF38               | JPM3-ITF-AF38(2)          | 37 U                           | 37 U                | 37 U                 | 37 U           | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |
| AF39               | JPM3-ITF-AF39(2)          | 22 J                           | 37 U                | 25 J                 | 41             | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |
| AF40               | JPM3-ITF-AF40(2)          | 38 U                           | 38 U                | 38 U                 | 38 U           | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |
| AF42               | JPM3-ITF-AF42(2)          | 39 U                           | 39 U                | 39 U                 | 39 U           | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |
| AF43               | JPM3-ITF-AF43(2)          | 40 U                           | 40 U                | 40 U                 | 40 U           | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |
| AF44               | JPM3-ITF-AF44(2)          | 61                             | 38 U                | 30 J                 | 99             | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |
| AF46               | JPM3-ITF-AF46(2)          | 42 U                           | 42 U                | 42 U                 | 42 U           | -               | -               | 0.95 B             | -               | -              | -                | 33             | 17           | 0.59 U         | 0.67 U           | 65           |
| AF47               | JPM3-ITF-AF47(2)          | 42 U                           | 42 U                | 42 U                 | 42 U           | -               | -               | 1.3 B              | -               | -              | -                | 20             | 15           | 0.14 B         | 0.68 U           | 68           |
| AF48               | JPM3-ITF-AF48(2)          | 41 U                           | 41 U                | 41 U                 | 41 U           | -               | -               | 1.1 B              | -               | -              | -                | 32             | 43           | 0.35 B         | 0.66 U           | 94           |
| AF49               | JPM3-ITF-AF49(2)/AF49B(1) | 41 U                           | 41 U                | 41 U                 | 41 U           | -               | -               | 1.2 B              | -               | -              | -                | 31             | 57           | 0.31 B         | 0.65 U           | 95           |
| AF51               | JPM3-ITF-AF51(2)          | 39 U                           | 39 U                | 39 U                 | 39 U           | -               | -               | 0.9 B              | -               | -              | -                | 24             | 17           | 0.59 U         | 0.67 U           | 61           |
| AF52               | JPM3-ITF-AF52(2)          | 41 U                           | 41 U                | 41 U                 | 41 U           | -               | -               | 1.1 B              | -               | -              | -                | 26             | 19           | 0.19 B         | 0.62 U           | 60           |
| AF53               | JPM3-ITF-AF53(2)          | 41 U                           | 41 U                | 41 U                 | 41 U           | -               | -               | 1.2 B              | -               | -              | -                | 23             | 15           | 0.19 B         | 0.62 U           | 64           |
| AF54               | JPM3-ITF-AF54(2)          | 69                             | 41 U                | 26 J                 | 76             | -               | -               | 0.98 B             | -               | -              | -                | 24             | 21           | 0.64 U         | 0.73 U           | 61           |
| AF55               | JPM3-ITF-AF55(2)          | 40 U                           | 40 U                | 40 U                 | 40 U           | -               | -               | 1.2 B              | -               | -              | -                | 25             | 19           | 0.26 B         | 0.67 U           | 59           |
| AF56               | JPM3-ITF-AF56(2)          | 28 J                           | 44 U                | 44 U                 | 21 J           | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |
| AF57               | JPM3-ITF-AF57(2)          | 28 J                           | 43 U                | 43 U                 | 43 U           | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |
| AF58               | JPM3-ITF-AF58(2)          | 42 U                           | 42 U                | 42 U                 | 42 U           | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |
| AF59               | JPM3-ITF-AF59(2)          | 39 U                           | 39 U                | 39 U                 | 39 U           | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |
| AF60               | JPM3-ITF-AF60(2)          | 43 U                           | 43 U                | 43 U                 | 43 U           | -               | -               | -                  | -               | -              | -                | -              | -            | -              | -                | -            |



Table 3-11

Confirmation Soil Sample Results  
 Site M3 - Flashing Grounds  
 Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
 Phase 2 Remedial Action  
 Joliet Army Ammunition Plant  
 Wilmington, Illinois

|                    |                           | Fixed Laboratory Results       |                     |                      |                |                 |                 |                  |                 |                |                  |                |              |                |                  |              |
|--------------------|---------------------------|--------------------------------|---------------------|----------------------|----------------|-----------------|-----------------|------------------|-----------------|----------------|------------------|----------------|--------------|----------------|------------------|--------------|
| Sample Designation | Sample Identification     | Indeno(1,2,3-cd)pyrene (ug/kg) | Naphthalene (ug/kg) | Phenanthrene (ug/kg) | Pyrene (ug/kg) | TPH-DRO (mg/kg) | TPH-CRO (mg/kg) | Antimony (mg/kg) | Arsenic (mg/kg) | Barium (mg/kg) | Chromium (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Silver (mg/kg) | Thallium (mg/kg) | Zinc (mg/kg) |
|                    | LRG                       | 17,000                         | 32,793,000          | NE                   | 49,193,000     | 2,500           | 2,500           | 50               | 21              | 625            | 213              | 190            | 500          | 16             | 0.64             | 720          |
|                    | URG                       | 17,000                         | 32,793,000          | NE                   | 49,193,000     | 2,500           | 2,500           | 757              | 84              | 1,950          | 213              | 925            | 500          | 9467           | 86               | 2,500        |
| AF62               | JPM3-ITF-AF62(2)          | 42 U                           | 42 U                | 42 U                 | 42 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF63               | JPM3-ITF-AF63(2)          | 44 U                           | 44 U                | 44 U                 | 44 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF64               | JPM3-ITF-AF64(2)          | 44 U                           | 44 U                | 44 U                 | 44 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF65               | JPM3-ITF-AF65(2)          | 41 U                           | 41 U                | 41 U                 | 41 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF66               | JPM3-ITF-AF66(2)          | 39 U                           | 39 U                | 39 U                 | 39 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF67               | JPM3-ITF-AF67(2)          | 40 U                           | 40 U                | 40 U                 | 40 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF68               | JPM3-ITF-AF68(2)          | 12 J                           | 38 U                | 17 J                 | 23 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF69               | JPM3-ITF-AF69(2)          | 40 U                           | 40 U                | 40 U                 | 40 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF70               | JPM3-ITF-AF70(2)          | 41 U                           | 41 U                | 41 U                 | 41 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF71               | JPM3-ITF-AF71(2)          | 15 J                           | 45 U                | 33 J                 | 54             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF72               | JPM3-ITF-AF72(2)          | 46 U                           | 46 U                | 46 U                 | 46 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF73               | JPM3-ITF-AF73(2)          | 17 J                           | 43 U                | 33 J                 | 47             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF74               | JPM3-ITF-AF74(2)          | 8.8 J                          | 43 U                | 43 U                 | 12 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF75               | JPM3-ITF-AF75(2)          | 130                            | 10 J                | 65                   | 140            | -               | -               | -                | -               | -              | -                | -              | 120          | -              | -                | 160          |
| AF76               | JPM3-ITF-AF76(2)          | 43 U                           | 43 U                | 43 U                 | 43 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF77               | JPM3-ITF-AF77(2)          | 41 U                           | 41 U                | 41 U                 | 41 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF78               | JPM3-ITF-AF78(2)          | 42 U                           | 42 U                | 42 U                 | 42 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF79               | JPM3-ITF-AF79(2)          | 16 J                           | 42 U                | 31 J                 | 40 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF80               | JPM3-ITF-AF80(2)          | 53                             | 45 U                | 8.4 J                | 21 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF81               | JPM3-ITF-AF81(2)          | 12 J                           | 40 U                | 28 J                 | 47             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF82               | JPM3-ITF-AF82(2)          | 32 J                           | 38 U                | 46                   | 50             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF83               | JPM3-ITF-AF83(2)          | 23 J                           | 26 J                | 64                   | 84             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF84               | JPM3-ITF-AF84(2)          | 22 J                           | 42 U                | 42 U                 | 37 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF85               | JPM3-ITF-AF85(2)          | 22 J                           | 36 U                | 36 U                 | 36 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF86               | JPM3-ITF-AF86(2)          | 12 J                           | 36 U                | 22 J                 | 26 J           | -               | 0.056 U         | -                | -               | -              | -                | 21             | -            | -              | -                | -            |
| AF87               | JPM3-ITF-AF87(2)          | 18 J                           | 39 U                | 39 U                 | 16 J           | -               | 0.059 U         | -                | -               | -              | -                | 43             | -            | -              | -                | -            |
| AF88               | JPM3-ITF-AF88(2)          | 36 U                           | 36 U                | 36 U                 | 36 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF89               | JPM3-ITF-AF89(2)          | 35 U                           | 35 U                | 35 U                 | 35 U           | -               | -               | -                | -               | -              | -                | -              | 270          | -              | -                | -            |
| AF90               | JPM3-ITF-AF90(2)          | 38 U                           | 38 U                | 14 J                 | 19 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF91               | JPM3-ITF-AF91(2)          | 37 U                           | 37 U                | 37 U                 | 37 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF92               | JPM3-ITF-AF92(2)          | 37 U                           | 37 U                | 37 U                 | 37 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF93               | JPM3-ITF-AF93(2)          | 38 U                           | 38 U                | 38 U                 | 38 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF94               | JPM3-ITF-AF94(2)          | 38 U                           | 38 U                | 38 U                 | 38 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF95               | JPM3-ITF-AF95(2)          | 23 J                           | 41 U                | 41 U                 | 41 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF96               | JPM3-ITF-AF96(2)          | 40 U                           | 40 U                | 40 U                 | 40 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF97               | JPM3-ITF-AF97(2)/AF97B(1) | 15 J                           | 38 U                | 38 U                 | 15 J           | 0.027           | 0.081 U         | -                | -               | -              | -                | 83             | -            | -              | -                | -            |
| AF98               | JPM3-ITF-AF98(2)          | 38 U                           | 38 U                | 38 U                 | 38 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF99               | JPM3-ITF-AF99(2)          | 40 U                           | 40 U                | 40 U                 | 40 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF101              | JPM3-ITF-AF101(2)         | 41 U                           | 41 U                | 41 U                 | 41 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF102              | JPM3-ITF-AF102(2)         | 40 U                           | 40 U                | 40 U                 | 40 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |



Table 3-11

Confirmation Soil Sample Results  
 Site M3 - Flashing Grounds  
 Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
 Phase 2 Remedial Action  
 Joliet Army Ammunition Plant  
 Wilmington, Illinois

|                    |                       | Fixed Laboratory Results       |                     |                      |                |                 |                 |                  |                 |                |                  |                |              |                |                  |              |
|--------------------|-----------------------|--------------------------------|---------------------|----------------------|----------------|-----------------|-----------------|------------------|-----------------|----------------|------------------|----------------|--------------|----------------|------------------|--------------|
| Sample Designation | Sample Identification | Indeno(1,2,3-cd)pyrene (ug/kg) | Naphthalene (ug/kg) | Phenanthrene (ug/kg) | Pyrene (ug/kg) | TPH-DRO (mg/kg) | TPH-GRO (mg/kg) | Antimony (mg/kg) | Arsenic (mg/kg) | Barium (mg/kg) | Chromium (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Silver (mg/kg) | Thallium (mg/kg) | Zinc (mg/kg) |
|                    | LRG                   | 17,000                         | 32,793,000          | NE                   | 49,193,000     | 2,500           | 2,500           | 50               | 21              | 625            | 213              | 190            | 500          | 16             | 0.64             | 720          |
|                    | URG                   | 17,000                         | 32,793,000          | NE                   | 49,193,000     | 2,500           | 2,500           | 757              | 84              | 1,950          | 213              | 925            | 500          | 9467           | 86               | 2,500        |
| AF103              | JPM3-ITF-AF103(2)     | 16 J                           | 10 J                | 31 J                 | 36 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF104              | JPM3-ITF-AF104(2)     | 11 J                           | 35 U                | 15 J                 | 27 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF105              | JPM3-ITF-AF105(2)     | 39 U                           | 39 U                | 39 U                 | 39 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF106              | JPM3-ITF-AF106(2)     | 29 J                           | 39 U                | 66                   | 89             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF107              | JPM3-ITF-AF107(2)     | 390                            | 34 U                | 720                  | 1,100          | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF110              | JPM3-ITF-AF110(2)     | 38 U                           | 38 U                | 38 U                 | 38 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF111              | JPM3-ITF-AF111(2)     | 56                             | 36 U                | 72                   | 130            | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF113              | JPM3-ITF-AF113(2)     | 40                             | 37 U                | 17 J                 | 44             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF114              | JPM3-ITF-AF114(2)     | 21 J                           | 39 U                | 34 J                 | 45             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF115              | JPM3-ITF-AF115(2)     | 81                             | 36 U                | 110                  | 200            | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF116              | JPM3-ITF-AF116(2)     | 21 J                           | 38 U                | 38 U                 | 38 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF117              | JPM3-ITF-AF117(2)     | 37 U                           | 37 U                | 37 U                 | 37 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF118              | JPM3-ITF-AF118(2)     | 220                            | 20 J                | 670                  | 830            | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF119              | JPM3-ITF-AF119(2)     | 84                             | 33 U                | 140                  | 220            | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF121              | JPM3-ITF-AF121(2)     | 15 J                           | 45 U                | 45 U                 | 16 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF122              | JPM3-ITF-AF122(2)     | 76                             | 34 U                | 39                   | 61             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF123              | JPM3-ITF-AF123(2)     | 36 U                           | 36 U                | 36 U                 | 36 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF124              | JPM3-ITF-AF124(2)     | 18 J                           | 37 U                | 37 U                 | 19 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF125              | JPM3-ITF-AF125(2)     | 34 J                           | 39 U                | 14 J                 | 41             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF126              | JPM3-ITF-AF126(2)     | 60                             | 39 U                | 21 J                 | 99             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF128              | JPM3-ITF-AF128(2)     | 12 J                           | 34 U                | 7.3 J                | 8.4 J          | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF129              | JPM3-ITF-AF129(2)     | 12 J                           | 39 U                | 39 U                 | 39 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF130              | JPM3-ITF-AF130(2)     | 38 U                           | 38 U                | 38 U                 | 38 U           | 0.017           | 0.059 U         | -                | -               | -              | -                | 16             | -            | -              | -                | -            |
| AF131              | JPM3-ITF-AF131(2)     | 38 U                           | 38 U                | 38 U                 | 38 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF132              | JPM3-ITF-AF132(2)     | 40 U                           | 40 U                | 40 U                 | 40 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF133              | JPM3-ITF-AF133(2)     | 40 U                           | 40 U                | 40 U                 | 40 U           | 0.11            | 0.06 U          | -                | -               | -              | -                | 30             | -            | -              | -                | -            |
| AF134              | JPM3-ITF-AF134(2)     | 20 J                           | 37 U                | 22 J                 | 42             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF135              | JPM3-ITF-AF135(2)     | 38 U                           | 38 U                | 38 U                 | 38 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF136              | JPM3-ITF-AF136(2)     | 34 U                           | 34 U                | 34 U                 | 34 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF137              | JPM3-ITF-AF137(2)     | 9.0 J                          | 38 U                | 8.0 J                | 13 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF138              | JPM3-ITF-AF138(2)     | 30 J                           | 36 U                | 40                   | 70             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF139              | JPM3-ITF-AF139(2)     | 38 U                           | 38 U                | 38 U                 | 38 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF140              | JPM3-ITF-AF140(2)     | 650                            | 41 U                | 470                  | 870            | -               | -               | -                | -               | -              | -                | -              | 95           | -              | -                | -            |
| AF141              | JPM3-ITF-AF141(2)     | 36 J                           | 36 U                | 30 J                 | 63             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF142              | JPM3-ITF-AF142(2)     | 59                             | 37 U                | 120                  | 190            | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF143              | JPM3-ITF-AF143(2)     | 71                             | 38 U                | 64                   | 150            | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF144              | JPM3-ITF-AF144(2)     | 19 J                           | 40 U                | 11 J                 | 31 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF145              | JPM3-ITF-AF145(2)     | 48                             | 39 U                | 27 J                 | 110            | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF146              | JPM3-ITF-AF146(2)     | 12 J                           | 40 U                | 31 J                 | 42             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF147              | JPM3-ITF-AF147(2)     | 38 U                           | 38 U                | 38 U                 | 38 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |



Table 3-11

Confirmation Soil Sample Results  
 Site M3 - Flashing Grounds  
 Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
 Phase 2 Remedial Action  
 Joliet Army Ammunition Plant  
 Wilmington, Illinois

|                    |                       | Fixed Laboratory Results       |                     |                      |                |                 |                 |                  |                 |                |                  |                |              |                |                  |              |
|--------------------|-----------------------|--------------------------------|---------------------|----------------------|----------------|-----------------|-----------------|------------------|-----------------|----------------|------------------|----------------|--------------|----------------|------------------|--------------|
| Sample Designation | Sample Identification | Indeno(1,2,3-cd)pyrene (µg/kg) | Naphthalene (µg/kg) | Phenanthrene (µg/kg) | Pyrene (µg/kg) | TPH-DRO (mg/kg) | TPH-GRO (mg/kg) | Antimony (mg/kg) | Arsenic (mg/kg) | Barium (mg/kg) | Chromium (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Silver (mg/kg) | Thallium (mg/kg) | Zinc (mg/kg) |
|                    | LRG                   | 17,000                         | 32,793,000          | NE                   | 49,193,000     | 2,500           | 2,500           | 50               | 21              | 625            | 213              | 190            | 500          | 16             | 0.64             | 720          |
|                    | URG                   | 17,000                         | 32,793,000          | NE                   | 49,193,000     | 2,500           | 2,500           | 757              | 84              | 1,950          | 213              | 925            | 500          | 9467           | 86               | 2,500        |
| AF148              | JPM3-ITF-AF148(2)     | 40 U                           | 40 U                | 40 U                 | 11 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF149              | JPM3-ITF-AF149(2)     | 47 U                           | 47 U                | 30 J                 | 30 J           | -               | -               | -                | -               | -              | -                | -              | 26           | -              | -                | -            |
| AF150              | JPM3-ITF-AF150(2)     | 47 U                           | 47 U                | 47 U                 | 47 U           | -               | -               | -                | -               | -              | -                | -              | 19           | -              | -                | -            |
| AF151              | JPM3-ITF-AF151(2)     | 42 U                           | 42 U                | 42 U                 | 42 U           | -               | -               | -                | -               | -              | -                | -              | 12           | -              | -                | -            |
| AF152              | JPM3-ITF-AF152(2)     | 45 U                           | 45 U                | 45 U                 | 45 U           | -               | -               | -                | -               | -              | -                | -              | 39           | -              | -                | -            |
| AF153              | JPM3-ITF-AF153(2)     | 45 U                           | 45 U                | 45 U                 | 45 U           | 0.014           | 0.018 J         | -                | -               | -              | -                | 21             | 14           | -              | -                | -            |
| AF154              | JPM3-ITF-AF154(2)     | 44 U                           | 44 U                | 44 U                 | 44 U           | 0.022           | 0.0088 J        | -                | -               | -              | -                | 20             | 19           | -              | -                | -            |
| AF155              | JPM3-ITF-AF155(2)     | 15 J                           | 45 U                | 15 J                 | 23 J           | -               | -               | -                | -               | -              | -                | -              | 68           | -              | -                | -            |
| AF156              | JPM3-ITF-AF156(2)     | 80                             | 44 U                | 97                   | 210            | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF157              | JPM3-ITF-AF157(2)     | 40 U                           | 40 U                | 81 U                 | 81 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF158              | JPM3-ITF-AF158(2)     | 44 U                           | 44 U                | 89 U                 | 11 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF159              | JPM3-ITF-AF159(2)     | 9.0 J                          | 42 U                | 9.1 J                | 20 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF160              | JPM3-ITF-AF160(2)     | 11 J                           | 42 U                | 10 J                 | 18 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF161              | JPM3-ITF-AF161(2)     | 18 J                           | 45                  | 130                  | 81             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF162              | JPM3-ITF-AF162(2)     | 36 J                           | 120 U               | 29 J                 | 50 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF163              | JPM3-ITF-AF163(2)     | 43                             | 8.0 J               | 38 J                 | 56 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF164              | JPM3-ITF-AF164(2)     | 44 U                           | 44 U                | 89 U                 | 89 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF165              | JPM3-ITF-AF165(2)     | 59                             | 37 U                | 39 J                 | 87             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF166              | JPM3-ITF-AF166(2)     | 40 U                           | 40 U                | 82 U                 | 82 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF167              | JPM3-ITF-AF167(2)     | 39 U                           | 15 J                | 13 J                 | 41 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF168              | JPM3-ITF-AF168(2)     | 370 U                          | 370 U               | 760 U                | 170 J          | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF169              | JPM3-ITF-AF169(2)     | 40 U                           | 40 U                | 40 U                 | 11 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF170              | JPM3-ITF-AF170(2)     | 41 U                           | 41 U                | 41 U                 | 13 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF171              | JPM3-ITF-AF171(2)     | 35 J                           | 39 U                | 14 J                 | 62             | -               | -               | -                | -               | -              | -                | -              | 170          | -              | -                | -            |
| AF172              | JPM3-ITF-AF172(2)     | 14 J                           | 39 U                | 16 J                 | 34 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF173              | JPM3-ITF-AF173(2)     | 33 J                           | 40 U                | 28 J                 | 60             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF175              | JPM3-ITF-AF175(2)     | 150                            | 40 U                | 150                  | 320            | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF176              | JPM3-ITF-AF176(2)     | 42 U                           | 42 U                | 42 U                 | 42 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF177              | JPM3-ITF-AF177(2)     | 16 J                           | 8.7 J               | 33 J                 | 37             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF178              | JPM3-ITF-AF178(2)     | 43 U                           | 43 U                | 43 U                 | 43 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF179              | JPM3-ITF-AF179(2)     | 34 J                           | 41 U                | 10 J                 | 48             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF180              | JPM3-ITF-AF180(2)     | 14 J                           | 45 U                | 45 U                 | 15 J           | -               | -               | -                | -               | -              | -                | -              | 36           | -              | -                | -            |
| AF181              | JPM3-ITF-AF181(2)     | 140                            | 47 U                | 130                  | 300            | -               | -               | -                | -               | -              | -                | -              | 210          | -              | -                | -            |
| AF182              | JPM3-ITF-AF182(2)     | 44 U                           | 44 U                | 44 U                 | 44 U           | -               | -               | -                | -               | -              | -                | -              | 25           | -              | -                | -            |
| AF183              | JPM3-ITF-AF183(2)     | 240                            | 43 U                | 51                   | 330            | -               | -               | -                | -               | -              | -                | -              | 84           | -              | -                | -            |
| AF184              | JPM3-ITF-AF184(2)     | 46 U                           | 46 U                | 46 U                 | 46 U           | -               | -               | -                | -               | -              | -                | -              | 20           | -              | -                | -            |
| AF185              | JPM3-ITF-AF185(2)     | 14 J                           | 47 U                | 47 U                 | 19 J           | -               | -               | -                | -               | -              | -                | -              | 55           | -              | -                | -            |
| AF186              | JPM3-ITF-AF186(2)     | 45 U                           | 45 U                | 45 U                 | 45 U           | -               | -               | -                | -               | -              | -                | -              | 14           | -              | -                | -            |
| AF187              | JPM3-ITF-AF187(2)     | 44 U                           | 44 U                | 44 U                 | 44 U           | -               | -               | -                | -               | -              | -                | -              | 12           | -              | -                | -            |
| AF188              | JPM3-ITF-AF188(2)     | 16 J                           | 41 U                | 9.4 J                | 27 J           | -               | -               | -                | -               | -              | -                | -              | 22           | -              | -                | -            |



Table 3-11

Confirmation Soil Sample Results  
 Site M3 - Flashing Grounds  
 Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
 Phase 2 Remedial Action  
 Joliet Army Ammunition Plant  
 Wilmington, Illinois

|                    |                             | Fixed Laboratory Results       |                     |                      |                |                 |                 |                  |                 |                |                  |                |              |                |                  |              |
|--------------------|-----------------------------|--------------------------------|---------------------|----------------------|----------------|-----------------|-----------------|------------------|-----------------|----------------|------------------|----------------|--------------|----------------|------------------|--------------|
| Sample Designation | Sample Identification       | Indeno(1,2,3-cd)pyrene (ug/kg) | Naphthalene (ug/kg) | Phenanthrene (ug/kg) | Pyrene (ug/kg) | TPH-DRO (mg/kg) | TPH-GRO (mg/kg) | Antimony (mg/kg) | Arsenic (mg/kg) | Barium (mg/kg) | Chromium (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Silver (mg/kg) | Thallium (mg/kg) | Zinc (mg/kg) |
|                    | LRG                         | 17,000                         | 32,793,000          | NE                   | 49,193,000     | 2,500           | 2,500           | 50               | 21              | 625            | 213              | 190            | 500          | 16             | 0.64             | 720          |
|                    | URG                         | 17,000                         | 32,793,000          | NE                   | 49,193,000     | 2,500           | 2,500           | 757              | 84              | 1,950          | 213              | 925            | 500          | 9467           | 86               | 2,500        |
| AF189              | JPM3-ITF-AF189(2)           | 44 U                           | 44 U                | 44 U                 | 14 J           | -               | -               | -                | -               | -              | -                | -              | 27           | -              | -                | -            |
| AF190              | JPM3-ITF-AF190(2)           | 21 J                           | 46 U                | 46 U                 | 24 J           | -               | -               | -                | -               | -              | -                | -              | 21           | -              | -                | -            |
| AF191              | JPM3-ITF-AF191(2)           | 48 U                           | 48 U                | 48 U                 | 48 U           | -               | -               | -                | -               | -              | -                | -              | 21           | -              | -                | -            |
| AF192              | JPM3-ITF-AF192(2)           | 14 J                           | 42 U                | 42 U                 | 13 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF193              | JPM3-ITF-AF193(2)           | 13 J                           | 43 U                | 43 U                 | 43 U           | -               | -               | -                | -               | -              | -                | -              | 18           | -              | -                | -            |
| AF194              | JPM3-ITF-AF194(2)           | 42 J                           | 13 J                | 39 J                 | 95             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF195              | JPM3-ITF-AF195(2)           | 80                             | 43 U                | 36 J                 | 100            | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF196              | JPM3-ITF-AF196(2)           | 16 J                           | 42 U                | 42 U                 | 42 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF197              | JPM3-ITF-AF197(2)           | 42 U                           | 42 U                | 42 U                 | 42 U           | -               | -               | 0.97 B           | -               | 130            | -                | 23             | 16           | -              | 0.68 U           | 51           |
| AF198              | JPM3-ITF-AF198(2)           | 34 J                           | 40 U                | 20 J                 | 54             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF199              | JPM3-ITF-AF199(2)           | 41 U                           | 41 U                | 41 U                 | 41 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF200              | JPM3-ITF-AF200(2)           | 55                             | 44 U                | 32 J                 | 94             | -               | -               | -                | -               | -              | -                | -              | 150          | -              | -                | -            |
| AF201              | JPM3-ITF-AF201(2)           | 21 J                           | 44 U                | 44 U                 | 21 J           | -               | -               | -                | 4.2             | -              | -                | 32             | 140          | -              | -                | -            |
| AF202              | JPM3-ITF-AF202(2)           | 42 U                           | 42 U                | 42 U                 | 42 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF204              | JPM3-ITF-AF204(2)           | 14 J                           | 40 U                | 40 U                 | 22 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF205              | JPM3-ITF-AF205(2)/AF205B(1) | 42                             | 38 U                | 32 J                 | 68             | -               | -               | 0.95 B           | -               | 110            | -                | 31             | -            | -              | 0.69 U           | 77           |
| AF206              | JPM3-ITF-AF206(2)           | 32 J                           | 37 U                | 23 J                 | 44             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF207              | JPM3-ITF-AF207(2)           | 72                             | 13 J                | 270                  | 270            | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF208              | JPM3-ITF-AF208(2)/AF208B(1) | 39 U                           | 39 U                | 39 U                 | 39 U           | 0.011           | 0.066 U         | -                | 7.4             | -              | -                | 13             | -            | -              | -                | -            |
| AF209              | JPM3-ITF-AF209(2)/AF209B(1) | 230                            | 10 J                | 150                  | 350            | 0.021           | 0.0087 U        | -                | 10              | -              | -                | 21             | -            | -              | -                | -            |
| AF211              | JPM3-ITF-AF211(2)           | 710                            | 40 U                | 1,600                | 2,100          | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF213              | JPM3-ITF-AF213(2)           | 17 J                           | 45 U                | 45 U                 | 45 U           | -               | -               | -                | -               | -              | -                | -              | 24           | -              | -                | 67           |
| AF214              | JPM3-ITF-AF214(2)           | 190                            | 47 U                | 47 U                 | 47 U           | -               | -               | -                | -               | -              | -                | -              | 17           | -              | -                | 70           |
| AF215              | JPM3-ITF-AF215(2)/AF215B(1) | 46 U                           | 46 U                | 46 U                 | 46 U           | -               | -               | 0.90 B           | -               | 180            | -                | 32             | 15           | -              | 0.61 U           | 94           |
| AF216              | JPM3-ITF-AF216(2)           | 40 U                           | 40 U                | 40 U                 | 40 U           | -               | -               | -                | -               | -              | -                | -              | 11           | -              | -                | 42           |
| AF217              | JPM3-ITF-AF217(2)           | 47 U                           | 47 U                | 47 U                 | 12 J           | -               | -               | -                | -               | -              | -                | -              | 20           | -              | -                | 85           |
| AF218              | JPM3-ITF-AF218(2)           | 16 J                           | 43 U                | 43 U                 | 43 U           | -               | -               | -                | -               | -              | -                | -              | 21           | -              | -                | 59           |
| AF219              | JPM3-ITF-AF219(2)           | 11 J                           | 42 U                | 42 U                 | 42 U           | -               | -               | -                | -               | -              | -                | -              | 16           | -              | -                | 39           |
| AF220              | JPM3-ITF-AF220(2)           | 100                            | 42 U                | 270                  | 280            | -               | -               | -                | -               | -              | -                | -              | 40           | -              | -                | 71           |
| AF221              | JPM3-ITF-AF221(2)           | 13 J                           | 44 U                | 44 U                 | 44 U           | -               | -               | -                | -               | -              | -                | -              | 28           | -              | -                | 59           |
| AF222              | JPM3-ITF-AF222(2)           | 44 U                           | 44 U                | 44 U                 | 44 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF223              | JPM3-ITF-AF223(2)           | 40 U                           | 40 U                | 40 U                 | 40 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF224              | JPM3-ITF-AF224(2)           | 45 U                           | 45 U                | 45 U                 | 45 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF225              | JPM3-ITF-AF225(2)           | 42 U                           | 42 U                | 42 U                 | 42 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF226              | JPM3-ITF-AF226(2)           | 42 U                           | 42 U                | 42 U                 | 42 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF227              | JPM3-ITF-AF227(2)/AF227B(1) | 42 U                           | 42 U                | 42 U                 | 42 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF228              | JPM3-ITF-AF228(2)           | 43 U                           | 43 U                | 43 U                 | 43 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF229              | JPM3-ITF-AF229(2)           | 30 J                           | 43 U                | 19 J                 | 39 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF230              | JPM3-ITF-AF230(2)           | 44 U                           | 44 U                | 44 U                 | 44 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF231              | JPM3-ITF-AF231(2)           | 150                            | 42 U                | 140                  | 260            | -               | -               | -                | -               | -              | -                | -              | 150          | -              | -                | -            |



Table 3-11

**Confirmation Soil Sample Results**  
**Site M3 - Flashing Grounds**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|                    |                       | Fixed Laboratory Results       |                     |                      |                |                 |                 |                  |                 |                |                  |                |              |                |                  |              |
|--------------------|-----------------------|--------------------------------|---------------------|----------------------|----------------|-----------------|-----------------|------------------|-----------------|----------------|------------------|----------------|--------------|----------------|------------------|--------------|
| Sample Designation | Sample Identification | Indeno(1,2,3-cd)pyrene (ug/kg) | Naphthalene (ug/kg) | Phenanthrene (ug/kg) | Pyrene (ug/kg) | TPH-DRO (mg/kg) | TPH-CRO (mg/kg) | Antimony (mg/kg) | Arsenic (mg/kg) | Barium (mg/kg) | Chromium (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Silver (mg/kg) | Thallium (mg/kg) | Zinc (mg/kg) |
|                    | LRG                   | 17,000                         | 32,793,000          | NE                   | 49,193,000     | 2,500           | 2,500           | 50               | 21              | 625            | 213              | 190            | 500          | 16             | 0.64             | 720          |
|                    | URG                   | 17,000                         | 32,793,000          | NE                   | 49,193,000     | 2,500           | 2,500           | 757              | 84              | 1,950          | 213              | 925            | 500          | 9467           | 86               | 2,500        |
| AF232              | JPM3-ITF-AF232(2)     | 42 U                           | 42 U                | 42 U                 | 42 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF233              | JPM3-ITF-AF233(2)     | 46 U                           | 46 U                | 46 U                 | 46 U           | -               | -               | -                | -               | -              | -                | -              | 20           | -              | -                | -            |
| AF234              | JPM3-ITF-AF234(2)     | 44 U                           | 44 U                | 44 U                 | 44 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF235              | JPM3-ITF-AF235(2)     | 17 J                           | 44 U                | 15 J                 | 33 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF236              | JPM3-ITF-AF236(2)     | 270                            | 15 J                | 380                  | 810            | -               | -               | -                | -               | -              | -                | -              | 150          | -              | -                | -            |
| AF237              | JPM3-ITF-AF237(2)     | 44 U                           | 44 U                | 44 U                 | 44 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF238              | JPM3-ITF-AF238(2)     | 44 U                           | 44 U                | 44 U                 | 44 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF239              | JPM3-ITF-AF239(2)     | 44 U                           | 44 U                | 44 U                 | 44 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF240              | JPM3-ITF-AF240(2)     | 42 U                           | 42 U                | 42 U                 | 18 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF241              | JPM3-ITF-AF241(2)     | 42 U                           | 42 U                | 42 U                 | 15 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF242              | JPM3-ITF-AF242(2)     | 9.6 J                          | 42 U                | 11 J                 | 17 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF243              | JPM3-ITF-AF243(2)     | 44 U                           | 44 U                | 44 U                 | 44 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF244              | JPM3-ITF-AF244(2)     | 42 U                           | 42 U                | 42 U                 | 42 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF245              | JPM3-ITF-AF245(2)     | 8.9 J                          | 42 U                | 9.0 J                | 16 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF246              | JPM3-ITF-AF246(2)     | 44 U                           | 44 U                | 44 U                 | 44 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF247              | JPM3-ITF-AF247(2)     | 43 U                           | 43 U                | 43 U                 | 43 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF248              | JPM3-ITF-AF248(2)     | -                              | -                   | -                    | -              | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF249              | JPM3-ITF-AF249(3)     | 44 U                           | 44 U                | 44 U                 | 44 U           | -               | -               | -                | -               | -              | -                | -              | 51           | -              | -                | -            |
| AF250              | JPM3-ITF-AF250(3)     | 120                            | 43 U                | 84                   | 220            | -               | -               | -                | -               | -              | -                | -              | 220          | -              | -                | -            |
| AF251              | JPM3-ITF-AF251(3)     | 17 J                           | 41 U                | 41 U                 | 23 J           | -               | -               | -                | 0.2 B           | -              | -                | 16             | 22           | -              | -                | -            |
| AF252              | JPM3-ITF-AF252(3)     | 780                            | 22 J                | 1,400                | 2,100          | -               | -               | -                | -               | -              | -                | -              | 140          | -              | -                | -            |
| AF253              | JPM3-ITF-AF253(3)     | 190                            | 47 U                | 110                  | 310            | -               | -               | -                | 9               | -              | -                | 57             | 170          | -              | -                | -            |
| AF254              | JPM3-ITF-AF254(3)     | 130                            | 48 U                | 150                  | 260            | -               | -               | -                | -               | -              | -                | -              | 190          | -              | -                | -            |
| AF255              | JPM3-ITF-AF255(2)     | 44 U                           | 44 U                | 44 U                 | 44 U           | -               | -               | 0.49 B           | -               | -              | -                | 23             | 17           | 0.57 U         | 0.65 U           | 66           |
| AF256              | JPM3-ITF-AF256(2)     | 44 U                           | 44 U                | 44 U                 | 44 U           | -               | -               | 0.97 B           | -               | -              | -                | 25             | 19           | 0.59 U         | 0.68 U           | 63           |
| AF257              | JPM3-ITF-AF257(2)     | 45 U                           | 45 U                | 45 U                 | 45 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF258              | JPM3-ITF-AF258(2)     | 42 U                           | 42 U                | 42 U                 | 42 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AF259              | JPM3-ITF-AF259(2)     | 41 U                           | 41 U                | 41 U                 | 41 U           | -               | -               | -                | -               | -              | -                | -              | 11           | -              | -                | -            |
| AF260              | JPM3-ITF-AF260(2)     | 48 U                           | 48 U                | 48 U                 | 17 J           | -               | -               | -                | -               | -              | -                | -              | 25           | -              | -                | -            |
| AP2                | JPM3-ITF-AP2(1)       | 90                             | 37 U                | 39                   | 150            | -               | -               | -                | -               | -              | -                | -              | 340          | -              | -                | 660          |
| AP3                | JPM3-ITF-AP3(1)       | 18 J                           | 34 U                | 34 U                 | 31 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP4                | JPM3-ITF-AP4(1)       | 50                             | 39 U                | 65                   | 130            | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP8                | JPM3-ITF-AP8(1)       | 40 U                           | 40 U                | 40 U                 | 17 J           | -               | -               | -                | 15              | -              | -                | 51             | -            | -              | -                | 260          |
| AP12               | JPM3-ITF-AP12(1)      | 42 U                           | 42 U                | 42 U                 | 42 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP13               | JPM3-ITF-AP13(1)      | 37 U                           | 37 U                | 37 U                 | 17 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP14               | JPM3-ITF-AP14(1)      | 39 U                           | 39 U                | 39 U                 | 19 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP15               | JPM3-ITF-AP15(1)      | 40 U                           | 40 U                | 40 U                 | 40 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP17               | JPM3-ITF-AP17(1)      | 38 U                           | 38 U                | 38 U                 | 38 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP18               | JPM3-ITF-AP18(1)      | 220                            | 27 J                | 360                  | 450            | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP21               | JPM3-ITF-AP21(1)      | 91                             | 42 U                | 61                   | 170            | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |



**Table 3-11**  
**Confirmation Soil Sample Results**  
**Site M3 - Flashing Grounds**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|                    |                       | Fixed Laboratory Results |                                |                     |                      |                |                 |                 |                  |                 |                |                  |                |              |                |                  |              |
|--------------------|-----------------------|--------------------------|--------------------------------|---------------------|----------------------|----------------|-----------------|-----------------|------------------|-----------------|----------------|------------------|----------------|--------------|----------------|------------------|--------------|
| Sample Designation | Sample Identification |                          | Indeno(1,2,3-cd)pyrene (µg/kg) | Naphthalene (µg/kg) | Phenanthrene (µg/kg) | Pyrene (µg/kg) | TPH-DRO (mg/kg) | TPH-GRO (mg/kg) | Antimony (mg/kg) | Arsenic (mg/kg) | Barium (mg/kg) | Chromium (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Silver (mg/kg) | Thallium (mg/kg) | Zinc (mg/kg) |
|                    |                       | LRG                      | 17,000                         | 32,793,000          | NE                   | 49,193,000     | 2,500           | 2,500           | 50               | 21              | 625            | 213              | 190            | 500          | 16             | 0.64             | 720          |
|                    |                       | URG                      | 17,000                         | 32,793,000          | NE                   | 49,193,000     | 2,500           | 2,500           | 757              | 84              | 1,950          | 213              | 925            | 500          | 9467           | 86               | 2,500        |
| AP23               | JPM3-ITF-AP23(1)      |                          | 27 J                           | 41 U                | 41 U                 | 41 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP24               | JPM3-ITF-AP24(1)      |                          | 39 U                           | 39 U                | 39 U                 | 39 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP25               | JPM3-ITF-AP25(1)      |                          | 41 U                           | 41 U                | 41 U                 | 41 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP26               | JPM3-ITF-AP26(1)      |                          | 41 U                           | 41 U                | 41 U                 | 41 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP27               | JPM3-ITF-AP27(1)      |                          | 39 U                           | 39 U                | 39 U                 | 39 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP28               | JPM3-ITF-AP28(1)      |                          | 38 U                           | 38 U                | 38 U                 | 38 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP29               | JPM3-ITF-AP29(1)      |                          | 40 U                           | 40 U                | 40 U                 | 40 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP30               | JPM3-ITF-AP30(1)      |                          | 44 U                           | 44 U                | 44 U                 | 13 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP31               | JPM3-ITF-AP31(1)      |                          | 46 U                           | 46 U                | 46 U                 | 46 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP32               | JPM3-ITF-AP32(1)      |                          | 41 U                           | 41 U                | 9.9 J                | 41 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP33               | JPM3-ITF-AP33(1)      |                          | 25 J                           | 41 U                | 26 J                 | 40 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP36               | JPM3-ITF-AP36(1)      |                          | 21 J                           | 42 U                | 15 J                 | 34 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP37               | JPM3-ITF-AP37(1)      |                          | 28 J                           | 42 U                | 11 J                 | 25 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP38               | JPM3-ITF-AP38(1)      |                          | 42 U                           | 42 U                | 42 U                 | 14 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP46               | JPM3-ITF-AP46(1)      |                          | 380 U                          | 380 U               | 380 U                | 380 U          | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | 160          |
| AP47               | JPM3-ITF-AP47(1)      |                          | 45                             | 36 U                | 26 J                 | 53             | -               | -               | -                | -               | -              | -                | -              | 290          | -              | -                | -            |
| AP50               | JPM3-ITF-AP50(1)      |                          | 35 J                           | 36 U                | 25 J                 | 73             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP56               | JPM3-ITF-AP56(1)      |                          | 690 U                          | 690 U               | 690 U                | 690 U          | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP57               | JPM3-ITF-AP57(1)      |                          | 28 J                           | 38 U                | 21 J                 | 40             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP63               | JPM3-ITF-AP63(1)      |                          | 620                            | 15 J                | 1,000                | 1,700          | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP66               | JPM3-ITF-AP66(1)      |                          | 35 J                           | 40 U                | 21 J                 | 48             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP67               | JPM3-ITF-AP67(1)      |                          | 18 J                           | 38 U                | 17 J                 | 30 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP68               | JPM3-ITF-AP68(1)      |                          | 150                            | 36 U                | 120                  | 330            | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP69               | JPM3-ITF-AP69(1)      |                          | 200                            | 41 U                | 540                  | 700            | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP70               | JPM3-ITF-AP70(1)      |                          | 460                            | 8.5 J               | 1,000                | 1,300          | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP71               | JPM3-ITF-AP71(1)      |                          | 11 J                           | 36 U                | 8.9 J                | 13 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP72               | JPM3-ITF-AP72(1)      |                          | 39 U                           | 39 U                | 9.9 J                | 25 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP73               | JPM3-ITF-AP73(1)      |                          | 19 J                           | 45 U                | 14 J                 | 26 J           | -               | -               | -                | -               | -              | -                | -              | 100          | -              | -                | -            |
| AP74               | JPM3-ITF-AP74(1)      |                          | 220 U                          | 220 U               | 220 U                | 220 U          | -               | -               | -                | -               | -              | -                | -              | 220          | -              | -                | -            |
| AP77               | JPM3-ITF-AP77(1)      |                          | 34 J                           | 40 U                | 70 J                 | 91             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP78               | JPM3-ITF-AP78(1)      |                          | 42 U                           | 42 U                | 86 U                 | 11 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP80               | JPM3-ITF-AP80(1)      |                          | 100                            | 61                  | 190                  | 220            | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP81               | JPM3-ITF-AP81(1)      |                          | 13 J                           | 46 U                | 9.4 J                | 20 J           | -               | -               | -                | -               | -              | -                | -              | 40           | -              | -                | -            |
| AP83               | JPM3-ITF-AP83(1)      |                          | 57                             | 42 U                | 53                   | 130            | -               | -               | -                | -               | -              | -                | -              | 85           | -              | -                | -            |
| AP85               | JPM3-ITF-AP85(1)      |                          | 110                            | 45 U                | 70                   | 170            | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP86               | JPM3-ITF-AP86(1)      |                          | 12 J                           | 45 U                | 45 U                 | 16 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP87               | JPM3-ITF-AP87(1)      |                          | 77                             | 40 U                | 50                   | 110            | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP88               | JPM3-ITF-AP88(1)      |                          | 57                             | 42 U                | 42 J                 | 95             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP89               | JPM3-ITF-AP89(1)      |                          | 440                            | 51                  | 1,000                | 1,200          | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP90               | JPM3-ITF-AP90(1)      |                          | 520                            | 20 J                | 390                  | 840            | -               | -               | -                | -               | -              | -                | -              | 300          | -              | -                | 780          |



Table 3-11

**Confirmation Soil Sample Results**  
**Site M3 - Flashing Grounds**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|                    |                       | Fixed Laboratory Results |                                |                     |                      |                |                 |                 |                  |                 |                |                  |                |              |                |                  |              |
|--------------------|-----------------------|--------------------------|--------------------------------|---------------------|----------------------|----------------|-----------------|-----------------|------------------|-----------------|----------------|------------------|----------------|--------------|----------------|------------------|--------------|
| Sample Designation | Sample Identification |                          | Indeno(1,2,3-cd)pyrene (ug/kg) | Naphthalene (ug/kg) | Phenanthrene (ug/kg) | Pyrene (ug/kg) | TPH-DRO (mg/kg) | TPH-GRO (mg/kg) | Antimony (mg/kg) | Arsenic (mg/kg) | Barium (mg/kg) | Chromium (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Silver (mg/kg) | Thallium (mg/kg) | Zinc (mg/kg) |
|                    |                       | LRG                      | 17,000                         | 32,793,000          | NE                   | 49,193,000     | 2,500           | 2,500           | 50               | 21              | 625            | 213              | 190            | 500          | 16             | 0.64             | 720          |
|                    |                       | URG                      | 17,000                         | 32,793,000          | NE                   | 49,193,000     | 2,500           | 2,500           | 757              | 84              | 1,950          | 213              | 925            | 500          | 9467           | 86               | 2,500        |
| AP91               | JPM3-ITF-AP91(1)      |                          | 200                            | 45 U                | 230                  | 370            | -               | -               | -                | -               | -              | -                | -              | 170          | -              | -                | 620          |
| AP92               | JPM3-ITF-AP92(2)      |                          | 25 J                           | 41 U                | 20 J                 | 43             | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP93               | JPM3-ITF-AP93(2)      |                          | 15 J                           | 40 U                | 16 J                 | 21 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP94               | JPM3-ITF-AP94(1)      |                          | -                              | -                   | -                    | -              | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP96               | JPM3-ITF-AP96(1)      |                          | -                              | -                   | -                    | -              | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP97               | JPM3-ITF-AP97(1)      |                          | -                              | -                   | -                    | -              | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP98               | JPM3-ITF-AP98(1)      |                          | 25 J                           | 46 U                | 22 J                 | 44 J           | -               | -               | -                | -               | -              | -                | -              | 41           | -              | -                | -            |
| AP99               | JPM3-ITF-AP99(1)      |                          | 64                             | 44 U                | 58                   | 130            | -               | -               | -                | -               | -              | -                | -              | 45           | -              | -                | -            |
| AP100              | JPM3-ITF-AP100(1)     |                          | 26 J                           | 43 U                | 15 J                 | 35 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP101              | JPM3-ITF-AP101(1)     |                          | 46 U                           | 46 U                | 46 U                 | 46 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP102              | JPM3-ITF-AP102(1)     |                          | 46 U                           | 46 U                | 46 U                 | 31 J           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| AP103              | JPM3-ITF-AP103(1)     |                          | 48 U                           | 48 U                | 48 U                 | 48 U           | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| CR-AP1             | JPM3-CR-AP1(0.5)      |                          | -                              | -                   | -                    | -              | -               | -               | -                | -               | -              | 29               | -              | -            | -              | -                | -            |
| CR-AP2             | JPM3-CR-AP2(0.5)      |                          | -                              | -                   | -                    | -              | -               | -               | -                | -               | -              | 29               | -              | -            | -              | -                | -            |
| CR-AP3             | JPM3-CR-AP3(0.5)      |                          | -                              | -                   | -                    | -              | -               | -               | -                | -               | -              | 28               | -              | -            | -              | -                | -            |
| CR-AP4             | JPM3-CR-AP4(0.5)      |                          | -                              | -                   | -                    | -              | -               | -               | -                | -               | -              | 30               | -              | -            | -              | -                | -            |
| CR-AF1             | JPM3-CR-AF1(2)        |                          | -                              | -                   | -                    | -              | -               | -               | -                | -               | -              | 28               | -              | -            | -              | -                | -            |
| OTF-AF7            | JPM3-OTF-AF7(2)       |                          | -                              | -                   | -                    | -              | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| OTF-AF8            | JPM3-OTF-AF8(2)       |                          | -                              | -                   | -                    | -              | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| OTF-AF9            | JPM3-OTF-AF9(2)       |                          | -                              | -                   | -                    | -              | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| OTF-AP19           | JPM3-OTF-AP19(1)      |                          | -                              | -                   | -                    | -              | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| OTF-AP20           | JPM3-OTF-AP20(1)      |                          | -                              | -                   | -                    | -              | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |
| OTF-AP21           | JPM3-OTF-AP21(1)      |                          | -                              | -                   | -                    | -              | -               | -               | -                | -               | -              | -                | -              | -            | -              | -                | -            |

**Notes:**

<sup>1</sup> Negative test kit results are to be interpreted as non-detects.

*Result* = Result reported to the method detection limit

*Result* = Result reported to the method detection limit, but the method detection limit is greater than the LRG and URG criteria

- = not analyzed

DRO = diesel-range organics

GRO = gasoline-range organics

LRG = lower remediation goal

ug/kg = micrograms per kilogram

mg/kg = milligrams per kilogram

NE = not established

TNB = trinitrobenzene

TNT = trinitrotoluene

TPH = total petroleum hydrocarbons

URG = upper remediation goal

XRF = x-ray fluorescence

**Qualifiers:**

B = The compound was also detected in the method blank.

J = Indicates an estimated value.

U = Indicates that the compound or analyte was analyzed for, but not detected at or above the stated limit.



**Table 3-12**

**Characterization and Confirmation Soil Sample Results  
Site M3 - Burning Areas  
Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
Phase 2 Remedial Action  
Joliet Army Ammunition Plant  
Wilmington, Illinois**

|                    |                       | Test Kit Results  |
|--------------------|-----------------------|-------------------|
| Sample Designation | Sample Identification | 2,4,6-TNT (mg/kg) |
| LRG                |                       | 200               |
| URG                |                       | 459               |
| AF1                | JPM3-OTF-AF1(1)       | 2.48              |
| AF3                | JPM3-OTF-AF3(1)       | 2.84              |
| AF4                | JPM3-OTF-AF4(1)       | 0.21              |
| AF5                | JPM3-OTF-AF5(1)       | 5.42              |
| AF6                | JPM3-OTF-AF6(2)       | 2.59              |
| AP1                | JPM3-OTF-AP1(0.5)     | 1.86              |
| AP2                | JPM3-OTF-AP2(0.5)     | 11.15             |
| AP3                | JPM3-OTF-AP3(0.5)     | 5.50              |
| AP4                | JPM3-OTF-AP4(0.5)     | 50.62             |
| AP5                | JPM3-OTF-AP5(0.5)     | 15.94             |
| AP6                | JPM3-OTF-AP6(0.5)     | 2.28              |
| AP7                | JPM3-OTF-AP7(0.5)     | 44.12             |
| AP9                | JPM3-OTF-AP9(0.5)     | 16.80             |
| AP10               | JPM3-OTF-AP10(0.5)    | 1.96              |
| AP11               | JPM3-OTF-AP11(0.5)    | 37.44             |
| AP12               | JPM3-OTF-AP12(0.5)    | 1.03              |
| AP13               | JPM3-OTF-AP13(0.5)    | 7.65              |
| AP14               | JPM3-OTF-AP14(0.5)    | 2.02              |
| AP16               | JPM3-OTF-AP16(0.5)    | 7.29              |
| AP17               | JPM3-OTF-AP17(1)      | 3.10              |
| AP24               | JPM3-OTF-AP24(1)      | 4.80              |
| CP1                | JPM3-OTF-CP1(1)       | 1.70              |
| CP2                | JPM3-OTF-CP2(1)       | 0.46              |
| CP3                | JPM3-OTF-CP3(1)       | 0.77              |
| CP4                | JPM3-OTF-CP4(1)       | 0.31              |
| CP6                | JPM3-OTF-CP6(1)       | 1.39              |
| CP7                | JPM3-OTF-CP7(1)       | 1.78              |
| CP8                | JPM3-OTF-CP8(1)       | 0.78              |
| CP10               | JPM3-OTF-CP10(1)      | 1.08              |
| CP11               | JPM3-OTF-CP11(1)      | 1.71              |

Notes:

LRG = lower remediation goal

mg/kg = milligrams per kilogram

TNT = trinitrotoluene

URG = upper remediation goal



**Table 3-13**

**Characterization and Confirmation Soil Sample Results**  
**Site M4**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|                    |                       | XRF Unit Results | Fixed Laboratory Results |
|--------------------|-----------------------|------------------|--------------------------|
| Sample Designation | Sample Identification | Lead (mg/kg)     | Lead (mg/kg)             |
| LRG                |                       | 500              | 500                      |
| URG                |                       | 500              | 500                      |
| AP2                | JPM4-AP2(1)           | 26               | --                       |
| AP2                | JPM4-AP2(3)           | 44               | --                       |
| AP3                | JPM4-AP3(1)           | 250              | --                       |
| AP3                | JPM4-AP3(3)           | 26               | --                       |
| AP5                | JPM4-AP5(1)           | --               | 20                       |
| AP7                | JPM4-AP7(1)           | --               | 320                      |
| AP8                | JPM4-AP8(1)           | --               | 360                      |
| AP9                | JPM4-AP9(1)           | --               | 410                      |
| AP10               | JPM4-AP10(1)          | --               | 33                       |
| AP11               | JPM4-AP11(0.5)        | --               | 21 B                     |
| AP12               | JPM4-AP12(0.5)        | --               | 130 B                    |
| AP14               | JPM4-AP14(0.5)        | --               | 290 B                    |
| AP16               | JPM4-AP16(0.5)        | --               | 79                       |
| AP17               | JPM4-AP17(0.5)        | --               | 55                       |
| AP18               | JPM4-AP18(0.5)        | --               | 27                       |
| AP19               | JPM4-AP19(0.5)        | --               | 39                       |
| AP20               | JPM4-AP20(0.5)        | --               | 32                       |
| AP32               | JPM4-AP32(0.5)        | --               | 300 B                    |
| AP33               | JPM4-AP33(0.5)        | --               | 12 B                     |
| AP34               | JPM4-AP34(0.5)        | --               | 16 B                     |
| AP35               | JPM4-AP35(0.5)        | --               | 17 B                     |
| AP36               | JPM4-AP36(0.5)        | --               | 17 B                     |
| AP37               | JPM4-AP37(0.5)        | --               | 16 B                     |
| AP38               | JPM4-AP38(0.5)        | --               | 18 B                     |
| AP39               | JPM4-AP39(0.5)        | --               | 170 B                    |
| AP40               | JPM4-AP40(0.5)        | --               | 23 B                     |
| AP41               | JPM4-AP41(0.5)        | --               | 85 B                     |
| AP42               | JPM4-AP42(0.5)        | --               | 220 B                    |
| AP43               | JPM4-AP43(0.5)        | --               | 20                       |
| AP44               | JPM4-AP44(0.5)        | --               | 24 B                     |
| AP45               | JPM4-AP45(0.5)        | --               | 74 B                     |
| AP46               | JPM4-AP46(0.5)        | --               | 17 B                     |
| AP47               | JPM4-AP47(0.5)        | --               | 18 B                     |
| AP48               | JPM4-AP48(0.5)        | --               | 65 B                     |
| AP49               | JPM4-AP49(0.5)        | --               | 280 B                    |
| AP51               | JPM4-AP51(0.5)        | --               | 430 B                    |



**Table 3-13**

**Characterization and Confirmation Soil Sample Results  
Site M4  
Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
Phase 2 Remedial Action  
Joliet Army Ammunition Plant  
Wilmington, Illinois**

|                    |                       | XRF Unit Results | Fixed Laboratory Results |
|--------------------|-----------------------|------------------|--------------------------|
| Sample Designation | Sample Identification | Lead (mg/kg)     | Lead (mg/kg)             |
| LRG                |                       | 500              | 500                      |
| URG                |                       | 500              | 500                      |
| AP52               | JPM4-AP52(0.5)        | --               | 66 B                     |
| AP53               | JPM4-AP53(0.5)        | --               | 160 B                    |
| AP54               | JPM4-AP54(2)          | --               | 320 B                    |
| AP57               | JPM4-AP57(0.5)        | --               | 480 B                    |
| AP58               | JPM4-AP58(2)          | --               | 23 B                     |
| AP64               | JPM4-AP64(0.5)        | --               | 18                       |
| AP28               | JPM4-AP28(2)          | --               | 220 B                    |
| AP30               | JPM4-AP30(2)          | --               | 99 B                     |
| AP59               | JPM4-AP59(0.5)        | --               | 55 B                     |
| AP61               | JPM4-AP61(0.5)        | --               | 50                       |
| AP62               | JPM4-AP62(2)          | --               | 34                       |
| AF2                | JPM4-AF2(4)           | --               | 210                      |
| AF3                | JPM4-AF3(4)           | --               | 230                      |
| CP1                | JPM4-CP1(0.5)         | --               | 35                       |
| CP2                | JPM4-CP2(0.5)         | --               | 30                       |
| CP3                | JPM4-CP3(0.5)         | --               | 30                       |
| CP4                | JPM4-CP4(0.5)         | --               | 33                       |
| CP5                | JPM4-CP5(0.5)         | --               | 31                       |
| CP6                | JPM4-CP6(0.5)         | --               | 29                       |
| CP8                | JPM4-CP8(0.5)         | --               | 62                       |
| CP9                | JPM4-CP9(0.5)         | --               | 36                       |
| CP10               | JPM4-CP10(0.5)        | --               | 30                       |
| CP11               | JPM4-CP10(0.5)        | --               | 53                       |
| CP12               | JPM4-CP12(0.5)        | --               | 230                      |
| CP16               | JPM4-CP16(0.5)        | --               | 430                      |
| CP17               | JPM4-CP17(0.5)        | --               | 73                       |
| CP18               | JPM4-CP18(0.5)        | --               | 220                      |
| CP19               | JPM4-CP19(0.5)        | --               | 47                       |
| CP20               | JPM4-CP20(0.5)        | --               | 100                      |
| CP21               | JPM4-CP21(0.5)        | --               | 42                       |
| CP22               | JPM4-CP22(0.5)        | --               | 83                       |
| CP23               | JPM4-CP23(0.5)        | --               | 87                       |
| CP24               | JPM4-CP24(0.5)        | --               | 53                       |
| CP25               | JPM4-CP25(0.5)        | --               | 39                       |
| CP26               | JPM4-CP26(0.5)        | --               | 24                       |
| CP27               | JPM4-CP27(0.5)        | --               | 27                       |



**Table 3-13**

**Characterization and Confirmation Soil Sample Results**  
**Site M4**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|   |                       | XRF Unit Results | Fixed Laboratory Results |
|---|-----------------------|------------------|--------------------------|
| Sample Designation  | Sample Identification | Lead (mg/kg)     | Lead (mg/kg)             |
| LRG   |                       | 500              | 500                      |
| URG   |                       | 500              | 500                      |
| <b>Characterization Test Pit Samples North of Lead Azide Lagoon</b> |                       |                  |                          |
| CP4   | JPM4-CP4(1)           | --               | 500                      |
| CP4   | JPM4-CP4(2)           | --               | 350                      |
| CP4   | JPM4-CP4(3)           | --               | 24                       |
| CP5   | JPM4-CP5(1)           | --               | 92                       |
| CP5   | JPM4-CP5(2)           | --               | 29                       |
| CP5   | JPM4-CP5(3)           | --               | 15                       |
| CP6   | JPM4-CP6(1)           | --               | 56                       |
| CP6   | JPM4-CP6(2)           | --               | 20                       |
| CP6   | JPM4-CP6(3)           | --               | 17                       |
| <b>Excavation West of the Lagoon</b>                                |                       |                  |                          |
| AP4   | JPM4-AP4(0.5)         | --               | 21                       |
| AP5   | JPM4-AP5(0.5)         | --               | 17                       |
| AP6   | JPM4-AP6(0.5)         | --               | 19                       |
| AP7   | JPM4-AP7(0.5)         | --               | 17                       |
| AF4   | JPM4-AF4(1)           | --               | 19                       |
| AF5   | JPM4-AF5(1)           | --               | 17                       |
| AF6   | JPM4-AF6(1)           | --               | 21                       |

**Notes:**

-- = not analyzed

LRG = lower remediation goal

mg/kg = milligrams per kilogram

URG = upper remediation goal

XRF = x-ray fluorescence

**Qualifiers:**

B = The compound was also detected in the method blank.



Table 3-14

**Characterization and Confirmation Soil Sample Results**  
**Site M12**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|                          |                       | XRF Unit Results | Fixed Laboratory Results |
|--------------------------|-----------------------|------------------|--------------------------|
| Sample Designation       | Sample Identification | Lead (mg/kg)     | Lead (mg/kg)             |
| LRG                      |                       | 500              | 500                      |
| URG                      |                       | 500              | 500                      |
| <b>Wastewater Lagoon</b> |                       |                  |                          |
| AF1                      | JPM12-AF1(2)          | <15              | --                       |
| AF2                      | JPM12-AF2(2)          | 30               | --                       |
| AF3                      | JPM12-AF3(2)          | --               | 15                       |
| AF4                      | JPM12-AF4(2)          | --               | 21                       |
| AF5                      | JPM12-AF5(2)          | --               | 53                       |
| AF6                      | JPM12-AF6(2)          | --               | 150                      |
| AF7                      | JPM12-AF7(2)          | --               | 49                       |
| AF8                      | JPM12-AF8(2)          | 24               | --                       |
| AF9                      | JPM12-AF9(2)          | 62               | --                       |
| AF12                     | JPM12-AF12(2)         | --               | 16                       |
| AP2                      | JPM12-AP2(1)          | --               | 18                       |
| AP3                      | JPM12-AP3(1)          | --               | 170                      |
| AP4                      | JPM12-AP4(1)          | --               | 150                      |
| AP5                      | JPM12-AP5(1)          | --               | 8.8                      |
| AP6                      | JPM12-AP6(1)          | --               | 130                      |
| AP7                      | JPM12-AP7(1)          | --               | 200                      |
| AP8                      | JPM12-AP8(1)          | --               | 180                      |
| AP9                      | JPM12-AP9(1)          | --               | 12                       |
| AP10                     | JPM12-AP10(1)         | --               | 20                       |
| AP11                     | JPM12-AP11(1)         | --               | 71                       |
| AP12                     | JPM12-AP12(1)         | --               | 150                      |
| AP13                     | JPM12-AP13(1)         | --               | 160                      |
| AP14                     | JPM12-AP14(1)         | 18               | --                       |
| AP15                     | JPM12-AP15(1)         | 35               | --                       |
| AP16                     | JPM12-AP16(1)         | 91               | --                       |
| AP17                     | JPM12-AP17(1)         | 31               | --                       |
| AP18                     | JPM12-AP18(1)         | <18              | --                       |
| AP19                     | JPM12-AP19(1)         | 29               | --                       |
| AP20                     | JPM12-AP20(1)         | 30               | --                       |
| AP21                     | JPM12-AP21(1)         | 120              | --                       |
| AP22                     | JPM12-AP22(1)         | 55               | --                       |
| AP24                     | JPM12-AP24(1)         | 288              | --                       |
| AP25                     | JPM12-AP25(1)         | 21               | --                       |
| AP26                     | JPM12-AP26(1)         | 63               | --                       |
| AP27                     | JPM12-AP27(1)         | <18              | --                       |
| AP29                     | JPM12-AP29(1)         | 25               | --                       |
| AP30                     | JPM12-AP30(1)         | 75               | --                       |
| AP31                     | JPM12-AP31(1)         | 285              | --                       |



**Table 3-14**

**Characterization and Confirmation Soil Sample Results  
Site M12  
Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
Phase 2 Remedial Action  
Joliet Army Ammunition Plant  
Wilmington, Illinois**

|                                      |                       | XRF Unit Results | Fixed Laboratory Results |
|--------------------------------------|-----------------------|------------------|--------------------------|
| Sample Designation                   | Sample Identification | Lead (mg/kg)     | Lead (mg/kg)             |
|                                      | LRG                   | 500              | 500                      |
|                                      | URG                   | 500              | 500                      |
| <b>Wastewater Lagoon (continued)</b> |                       |                  |                          |
| AP32                                 | JPM12-AP32(1)         | 42               | --                       |
| AP33                                 | JPM12-AP33(1)         | 71               | --                       |
| AP34                                 | JPM12-AP34(1)         | 240              | --                       |
| AP35                                 | JPM12-AP35(1)         | 262              | --                       |
| AP36                                 | JPM12-AP36(1)         | 53               | --                       |
| AP38                                 | JPM12-AP38(1)         | 20               | --                       |
| AP39                                 | JPM12-AP39(1)         | 78               | --                       |
| AP40                                 | JPM12-AP40(1)         | 29               | --                       |
| AP41                                 | JPM12-AP41(1)         | 79               | --                       |
| AP42                                 | JPM12-AP42(1)         | 273              | --                       |
| AP43                                 | JPM12-AP43(1)         | 172              | --                       |
| AP45                                 | JPM12-AP45(1)         | --               | 120                      |
| AP47                                 | JPM12-AP47(1)         | --               | 46                       |
| AP55                                 | JPM12-AP55(1)         | 45               | --                       |
| AP56                                 | JPM12-AP56(1)         | 147              | --                       |
| AP57                                 | JPM12-AP57(1)         | 28               | --                       |
| AP58                                 | JPM12-AP58(1)         | 119              | --                       |
| AP59                                 | JPM12-AP59(1)         | 34               | --                       |
| AP60                                 | JPM12-AP60(1)         | 29               | --                       |
| AP82                                 | JPM12-AP82(1)         | --               | 20                       |
| AP84                                 | JPM12-AP84(1)         | 111              | --                       |
| AP86                                 | JPM12-AP86(1)         | --               | 110                      |
| AP87                                 | JPM12-AP87(1)         | --               | 9.7                      |
| AP88                                 | JPM12-AP88(1)         | --               | 18                       |
| CP2                                  | JPM12-CP2(1)          | --               | 450                      |
| CP3                                  | JPM12-CP3(1)          | --               | 480                      |
| CP4                                  | JPM12-CP4(1)          | --               | 170                      |
| CP5                                  | JPM12-CP5(1)          | --               | 33                       |
| CP6                                  | JPM12-CP6(1)          | --               | 28                       |
| CP7                                  | JPM12-CP7(.5)         | 132              | --                       |
| CP8                                  | JPM12-CP8(.5)         | --               | 430                      |
| CP9                                  | JPM12-CP9(.5)         | 172              | --                       |
| CP11                                 | JPM12-CP11(.5)        | 365              | --                       |
| <b>Drainage Ditch and Outfall</b>    |                       |                  |                          |
| AF10                                 | JPM12-AF10(2)         | --               | 18                       |
| AF11                                 | JPM12-AF11(2)         | --               | 18                       |
| AP48                                 | JPM12-AP48(1)         | --               | 300                      |
| AP49                                 | JPM12-AP49(1)         | --               | 44                       |



Table 3-14

**Characterization and Confirmation Soil Sample Results**  
**Site M12**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

|   |                       | XRF Unit Results | Fixed Laboratory Results |
|---|-----------------------|------------------|--------------------------|
| Sample Designation                            | Sample Identification | Lead (mg/kg)     | Lead (mg/kg)             |
|   | LRG                   | 500              | 500                      |
|   | URG                   | 500              | 500                      |
| <b>Drainage Ditch and Outfall (continued)</b> |                       |                  |                          |
| AP50  | JPM12-AP50(1)         | --               | 49                       |
| AP51  | JPM12-AP51(1)         | --               | 35                       |
| AP52  | JPM12-AP52(1)         | --               | 38                       |
| AP53  | JPM12-AP53(1)         | --               | 28                       |
| AP54  | JPM12-AP54(1)         | --               | 41                       |
| AP61  | JPM12-AP61(1)         | <17              | --                       |
| AP62  | JPM12-AP62(1)         | <16              | --                       |
| AP63  | JPM12-AP63(1)         | 20               | --                       |
| AP64  | JPM12-AP64(1)         | <20              | --                       |
| AP65  | JPM12-AP65(1)         | 237              | --                       |
| AP66  | JPM12-AP66(1)         | 56               | --                       |
| AP67  | JPM12-AP67(1)         | 19               | --                       |
| AP68  | JPM12-AP68(1)         | <18              | --                       |
| AP69  | JPM12-AP69(1)         | --               | 60                       |
| AP70  | JPM12-AP70(1)         | 20               | --                       |
| AP71  | JPM12-AP71(1)         | 26               | --                       |
| AP72  | JPM12-AP72(1)         | --               | 130                      |
| AP73  | JPM12-AP73(1)         | 28               | --                       |
| AP74  | JPM12-AP74(1)         | 26               | --                       |
| AP75  | JPM12-AP75(1)         | 22               | --                       |
| AP77  | JPM12-AP77(1)         | 49               | --                       |
| AP78  | JPM12-AP78(1)         | 138              | --                       |
| AP79  | JPM12-AP79(1)         | 113              | --                       |
| AP83  | JPM12-AP83(1)         | --               | 35                       |
| AP85  | JPM12-AP85(1)         | --               | 460                      |
| CP2   | JPM12-DITCH-CP2(1)    | --               | 430                      |
| CP5   | JPM12-DITCH-CP5(1)    | --               | 490                      |
| CP7   | JPM12-DITCH-CP7(1)    | --               | 250                      |
| CP8   | JPM12-DITCH-CP8(1)    | --               | 330                      |
| CP9   | JPM12-DITCH-CP9(1)    | --               | 170                      |
| CP10  | JPM12-DITCH-CP10(1)   | --               | 250                      |
| CP12  | JPM12-DITCH-CP12(1)   | --               | 410                      |
| CP13  | JPM12-DITCH-CP13(1)   | --               | 240                      |
| CP14  | JPM12-DITCH-CP14(1)   | --               | 360                      |
| CP15  | JPM12-DITCH-CP15(1)   | --               | 280                      |
| HUMP1   | JPM12-HUMP1(1)        | 92               | --                       |
| HUMP2   | JPM12-HUMP2(1)        | 122              | --                       |
| HUMP3   | JPM12-HUMP3(1)        | 39               | --                       |



**Table 3-14**

**Characterization and Confirmation Soil Sample Results  
Site M12  
Closure Report - Sites L2, L5, L23A, M3, M4, and M12  
Phase 2 Remedial Action  
Joliet Army Ammunition Plant  
Wilmington, Illinois**

|   |                       | XRF Unit Results | Fixed Laboratory Results |
|---|-----------------------|------------------|--------------------------|
| Sample Designation                            | Sample Identification | Lead (mg/kg)     | Lead (mg/kg)             |
|   | LRG                   | 500              | 500                      |
|   | URG                   | 500              | 500                      |
| <b>Drainage Ditch and Outfall (continued)</b> |                       |                  |                          |
| HUMP4   | JPM12-HUMP4(1)        | 74               | --                       |
| HUMP5   | JPM12-HUMP5(1)        | 55               | --                       |
| HUMP6   | JPM12-HUMP6(1)        | 62               | --                       |
| HUMP7   | JPM12-HUMP7(1)        | 39               | --                       |
| HUMP8   | JPM12-HUMP8(1)        | 173              | --                       |
| HUMP9   | JPM12-HUMP9(1)        | 130              | --                       |

Notes:

-- = not analyzed

LRG = lower remediation goal

mg/kg = milligrams per kilogram

URG = upper remediation goal

XRF = x-ray fluorescence



**Table 3-15**

**TCLP 2,4-DNT Results**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

| Sample Designation | Sample Identification | 2,4-DNT (mg/kg) | TCLP 2,4-DNT (mg/L) |
|--------------------|-----------------------|-----------------|---------------------|
|                    | LRG                   | 20              | N/A                 |
|                    | URG                   | 20              | N/A                 |
|                    | RCRA                  | N/A             | 0.13                |
| Site L2            |                       |                 |                     |
| AP37               | JPL2-AP37(0.5)        | 3.7             | 0.00055             |

Notes:

DNT = dinitrotoluene

LRG = lower remediation goal

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

N/A = not applicable

RCRA = Resource Conservation and Recovery Act

TCLP = toxicity characteristic leaching procedure

URG = upper remediation goal



Table 3-16

**TCLP Metals Results**  
**Closure Report - Site L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

| Sample Designation | Sample Identification | Lead (mg/kg) | TCLP Lead (mg/L) | Arsenic (mg/kg) | TCLP Arsenic (mg/L) |
|--------------------|-----------------------|--------------|------------------|-----------------|---------------------|
|                    | LRG                   | 500          | N/A              | 21              | N/A                 |
|                    | URG                   | 500          | N/A              | 84              | N/A                 |
|                    | RCRA                  | N/A          | 5                | N/A             | 5                   |
| <b>Site L2</b>     |                       |              |                  |                 |                     |
| AF65               | JPL2-AF65(1)          | 240          | 0.072            | --              | --                  |
| CP26               | JPL2-CP26(1)          | 150          | 0.08             | --              | --                  |
| CP95               | JPL2-CP95(0.5)        | 260          | 0.026 J          | --              | --                  |
| CP96               | JPL2-CP96(0.5)        | 210          | 0.017 J          | --              | --                  |
| CP97               | JPL2-CP97(0.5)        | 160          | 0.16             | --              | --                  |
| <b>Site L5</b>     |                       |              |                  |                 |                     |
| AP1                | JPL5-AP1(0.5)         | 110          | 0.037 J          | --              | --                  |
| SP4                | JPL5-SP4(1)           | --           | --               | 20              | 0.050 U             |
| C4                 | JPL5-C4(1)            | --           | 0.014 B          | --              | --                  |
| D4                 | JPL5-D4(1)            | 400          | 0.038 B          | --              | --                  |
| E4                 | JPL5-E4(1)            | --           | 0.050 U          | --              | --                  |
| E5                 | JPL5-E5(1)            | --           | 0.0079 B         | --              | --                  |
| <b>Site M3</b>     |                       |              |                  |                 |                     |
| AF30               | JPM3-ITF-AF30(2)      | 225          | 0.052            | --              | --                  |
| AF44               | JPM3-ITF-AF44(2)      | 115          | 0.074            | --              | --                  |
| AF56               | JPM3-ITF-AF56(2)      | 112          | 0.012 B          | --              | --                  |
| AF75               | JPM3-ITF-AF75(2)      | 120          | 0.02 B           | --              | --                  |
| AF81               | JPM3-ITF-AF81(2)      | 363          | 0.048 B          | --              | --                  |
| AF82               | JPM3-ITF-AF82(2)      | 295          | 0.038 B          | --              | --                  |
| AF87               | JPM3-ITF-AF87(2)      | 160          | 0.19             | --              | --                  |
| AF89               | JPM3-ITF-AF89(2)      | 270          | 0.062            | --              | --                  |
| AF90               | JPM3-ITF-AF90(2)      | 162          | 0.047 B          | --              | --                  |
| AF92               | JPM3-ITF-AF92(2)      | 125          | --               | --              | --                  |
| AF94               | JPM3-ITF-AF94(2)      | 209          | 0.06             | --              | --                  |
| AF97               | JPM3-ITF-AF97(2)      | 147          | 0.027 B          | --              | --                  |
| AF103              | JPM3-ITF-AF103(2)     | 176          | 0.05 B           | --              | --                  |
| AF104              | JPM3-ITF-AF104(2)     | 150          | 0.0072 B         | --              | --                  |
| AF116              | JPM3-ITF-AF116(2)     | 165          | 0.05 U           | --              | --                  |
| AF118              | JPM3-ITF-AF118(2)     | 122          | 0.014 B          | --              | --                  |
| AF119              | JPM3-ITF-AF119(2)     | 104          | 0.0067 B         | --              | --                  |
| AF125              | JPM3-ITF-AF125(2)     | 146          | 0.014 B          | --              | --                  |
| AF126              | JPM3-ITF-AF126(2)     | 142          | 0.023 B          | --              | --                  |
| AF143              | JPM3-ITF-AF143(2)     | 293          | 0.18             | --              | --                  |
| AF148              | JPM3-ITF-AF148(2)     | 256          | 0.013 B          | --              | --                  |
| AF160              | JPM3-ITF-AF160(2)     | 124          | 0.15             | --              | --                  |
| AF162              | JPM3-ITF-AF162(2)     | 317          | 1.2              | --              | --                  |
| AF171              | JPM3-ITF-AF171(2)     | 170          | 0.034 B          | --              | --                  |
| AF173              | JPM3-ITF-AF173(2)     | 157          | 0.054            | --              | --                  |
| AF175              | JPM3-ITF-AF175(2)     | 151          | 0.1              | --              | --                  |



Table 3-16

**TCLP Metals Results**  
**Closure Report - Site L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

| Sample Designation         | Sample Identification | Lead (mg/kg) | TCLP Lead (mg/L) | Arsenic (mg/kg) | TCLP Arsenic (mg/L) |
|----------------------------|-----------------------|--------------|------------------|-----------------|---------------------|
| LRG                        |                       | 500          | N/A              | 21              | N/A                 |
| URG                        |                       | 500          | N/A              | 84              | N/A                 |
| RCRA                       |                       | N/A          | 5                | N/A             | 5                   |
| <b>Site M3 (continued)</b> |                       |              |                  |                 |                     |
| AF181                      | JPM3-ITF-AF181(2)     | 210          | 0.025 B          | --              | --                  |
| AF195                      | JPM3-ITF-AF195(2)     | 142          | 0.22             | --              | --                  |
| AF200                      | JPM3-ITF-AF200(2)     | 150          | 0.18             | --              | --                  |
| AF201                      | JPM3-ITF-AF201(2)     | 140          | 0.051            | --              | --                  |
| AF202                      | JPM3-ITF-AF207(2)     | 101          | 0.059            | --              | --                  |
| AF209                      | JPM3-ITF-AF209(2)     | 128          | 0.059            | --              | --                  |
| AF222                      | JPM3-ITF-AF222(2)     | 159          | 0.05 U           | --              | --                  |
| AF223                      | JPM3-ITF-AF223(2)     | 173          | 0.05 U           | --              | --                  |
| AF224                      | JPM3-ITF-AF224(2)     | 200          | 0.05 U           | --              | --                  |
| AF225                      | JPM3-ITF-AF225(2)     | 176          | 0.05 U           | --              | --                  |
| AF226                      | JPM3-ITF-AF226(2)     | 146          | 0.05 U           | --              | --                  |
| AF227                      | JPM3-ITF-AF227(2)     | 152          | 0.05 U           | --              | --                  |
| AF228                      | JPM3-ITF-AF228(2)     | 125          | 0.05 U           | --              | --                  |
| AF229                      | JPM3-ITF-AF229(2)     | 164          | 0.065            | --              | --                  |
| AF230                      | JPM3-ITF-AF230(2)     | 123          | 0.0067 B         | --              | --                  |
| AF231                      | JPM3-ITF-AF231(2)     | 150          | 0.27             | --              | --                  |
| AF232                      | JPM3-ITF-AF232(2)     | 108          | 0.05 U           | --              | --                  |
| AF234                      | JPM3-ITF-AF234(2)     | 119          | 0.05 U           | --              | --                  |
| AF235                      | JPM3-ITF-AF235(2)     | 214          | 0.0053 B         | --              | --                  |
| AF236                      | JPM3-ITF-AF236(2)     | 150          | 0.15             | --              | --                  |
| AF237                      | JPM3-ITF-AF237(2)     | 135          | 0.25             | --              | --                  |
| AF238                      | JPM3-ITF-AF238(2)     | 103          | 0.018 B          | --              | --                  |
| AF239                      | JPM3-ITF-AF239(2)     | 125          | 0.027 B          | --              | --                  |
| AF240                      | JPM3-ITF-AF240(2)     | 101          | 0.008 B          | --              | --                  |
| AF241                      | JPM3-ITF-AF241(2)     | 165          | 0.022 B          | --              | --                  |
| AF245                      | JPM3-ITF-AF245(2)     | 111          | 0.05 U           | --              | --                  |
| AF250                      | JPM3-ITF-AF250(3)     | 220          | 0.32             | --              | --                  |
| AF252                      | JPM3-ITF-AF252(3)     | 140          | 0.41             | --              | --                  |
| AF253                      | JPM3-ITF-AF253(3)     | 170          | 0.093            | --              | --                  |
| AF254                      | JPM3-ITF-AF254(3)     | 190          | 0.11             | --              | --                  |
| AP2                        | JPM3-ITF-AP2(1)       | 340          | 0.17             | --              | --                  |
| AP3                        | JPM3-ITF-AP3(1)       | --           | 0.014 B          | --              | --                  |
| AP4                        | JPM3-ITF-AP4(1)       | --           | 0.017 B          | --              | --                  |
| AP8                        | JPM3-ITF-AP8(1)       | 391          | 0.027 B          | --              | --                  |
| AP13                       | JPM3-ITF-AP13(1)      | 108          | 0.014 B          | --              | --                  |
| AP21                       | JPM3-ITF-AP21(1)      | 263          | --               | --              | --                  |
| AP31                       | JPM3-ITF-AP31(1)      | 100          | 0.05 B           | --              | --                  |
| AP32                       | JPM3-ITF-AP32(1)      | 126          | 0.019 B          | --              | --                  |
| AP33                       | JPM3-ITF-AP33(1)      | 216          | 0.016 B          | --              | --                  |



Table 3-16

**TCLP Metals Results**  
**Closure Report - Site L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

| Sample Designation         | Sample Identification | Lead (mg/kg) | TCLP Lead (mg/L) | Arsenic (mg/kg) | TCLP Arsenic (mg/L) |
|----------------------------|-----------------------|--------------|------------------|-----------------|---------------------|
|                            | LRG                   | 500          | N/A              | 21              | N/A                 |
|                            | URG                   | 500          | N/A              | 84              | N/A                 |
|                            | RCRA                  | N/A          | 5                | N/A             | 5                   |
| <b>Site M3 (continued)</b> |                       |              |                  |                 |                     |
| AP46                       | JPM3-ITF-AP46(1)      | 234          | 0.56             | --              | --                  |
| AP47                       | JPM3-ITF-AP47(1)      | 290          | 0.026 B          | --              | --                  |
| AP56                       | JPM3-ITF-AP56(1)      | 348          | 0.02 B           | --              | --                  |
| AP57                       | JPM3-ITF-AP57(1)      | 278          | 0.016 B          | --              | --                  |
| AP63                       | JPM3-ITF-AP63(1)      | 175          | 0.014 B          | --              | --                  |
| AP68                       | JPM3-ITF-AP68(1)      | 368          | 0.21             | --              | --                  |
| AP70                       | JPM3-ITF-AP70(1)      | 130          | 0.024 B          | --              | --                  |
| AP72                       | JPM3-ITF-AP72(1)      | 101          | 0.0052 B         | --              | --                  |
| AP73                       | JPM3-ITF-AP73(1)      | 100          | 0.016 B          | --              | --                  |
| AP74                       | JPM3-ITF-AP74(1)      | 220          | 0.021 B          | --              | --                  |
| AP77                       | JPM3-ITF-AP77(1)      | 167          | 0.05 U           | --              | --                  |
| AP80                       | JPM3-ITF-AP80(1)      | 384          | 0.069            | --              | --                  |
| AP85                       | JPM3-ITF-AP85(1)      | 121          | --               | --              | --                  |
| AP87                       | JPM3-ITF-AP87(1)      | 165          | 0.016 B          | --              | --                  |
| AP88                       | JPM3-ITF-AP88(1)      | 250          | 0.012 B          | --              | --                  |
| AP89                       | JPM3-ITF-AP89(1)      | 269          | 0.033 B          | --              | --                  |
| AP90                       | JPM3-ITF-AP90(1)      | 300          | 0.086            | --              | --                  |
| AP91                       | JPM3-ITF-AP91(1)      | 170          | 0.043 B          | --              | --                  |
| AP92                       | JPM3-ITF-AP92(2)      | 113          | 0.05 U           | --              | --                  |
| AP93                       | JPM3-ITF-AP93(2)      | 162          | 0.0087 B         | --              | --                  |
| <b>Site M4</b>             |                       |              |                  |                 |                     |
| AP3                        | JPM4-AP3(1)           | 250          | 0.028 B          | --              | --                  |
| AP7                        | JPM4-AP7(1)           | 320          | 0.043 B          | --              | --                  |
| AP8                        | JPM4-AP8(1)           | 360          | 0.040 B          | --              | --                  |
| AP9                        | JPM4-AP9(1)           | 410          | 0.38             | --              | --                  |
| AP12                       | JPM4-AP12(0.5)        | 130 B        | 0.031 J          | --              | --                  |
| AP14                       | JPM4-AP14(0.5)        | 290 B        | 0.054 J          | --              | --                  |
| AP32                       | JPM4-AP32(0.5)        | 300 B        | 0.028 J          | --              | --                  |
| AP39                       | JPM4-AP39(0.5)        | 170 B        | 0.013 J          | --              | --                  |
| AP42                       | JPM4-AP42(0.5)        | 220 B        | 0.0059 J         | --              | --                  |
| AP49                       | JPM4-AP49(0.5)        | 280 B        | 0.015 J          | --              | --                  |
| AP51                       | JPM4-AP51(0.5)        | 430 B        | 0.99             | --              | --                  |
| AP53                       | JPM4-AP53(0.5)        | 160 B        | 0.026 J          | --              | --                  |
| AP54                       | JPM4-AP54(2)          | 320 B        | 0.063            | --              | --                  |
| AP57                       | JPM4-AP57(0.5)        | 480 B        | 0.34             | --              | --                  |
| AP28                       | JPM4-AP28(2)          | 220 B        | 0.0066 J         | --              | --                  |
| AF2                        | JPM4-AF2(4)           | 210          | 0.25             | --              | --                  |
| AF3                        | JPM4-AF3(4)           | 230          | 0.5              | --              | --                  |
| CP7                        | JPM4-CP7(0.5)         | 140          | 0.026 B          | --              | --                  |



Table 3-16

**TCLP Metals Results**  
**Closure Report - Site L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

| Sample Designation         | Sample Identification | Lead (mg/kg) | TCLP Lead (mg/L) | Arsenic (mg/kg) | TCLP Arsenic (mg/L) |
|----------------------------|-----------------------|--------------|------------------|-----------------|---------------------|
|                            | LRG                   | 500          | N/A              | 21              | N/A                 |
|                            | URG                   | 500          | N/A              | 84              | N/A                 |
|                            | RCRA                  | N/A          | 5                | N/A             | 5                   |
| <b>Site M4 (continued)</b> |                       |              |                  |                 |                     |
| CP12                       | JPM4-CP12(0.5)        | 230          | 0.043 B          | --              | --                  |
| CP16                       | JPM4-CP16(0.5)        | 430          | 0.056            | --              | --                  |
| CP18                       | JPM4-CP18(0.5)        | 220          | 0.064            | --              | --                  |
| CP20                       | JPM4-CP20(0.5)        | 100          | 0.015 B          | --              | --                  |
| CP4                        | JPM4-CP4(1)           | 500          | 0.18             | --              | --                  |
| CP4                        | JPM4-CP4(2)           | 350          | 0.013 B          | --              | --                  |
| <b>Site M12</b>            |                       |              |                  |                 |                     |
| AF6                        | JPM12-AF6(2)          | 150          | 0.16             | --              | --                  |
| AP3                        | JPM12-AP3(1)          | 170          | 0.0053 B         | --              | --                  |
| AP4                        | JPM12-AP4(1)          | 150          | 0.013 B          | --              | --                  |
| AP6                        | JPM12-AP6(1)          | 130          | 0.0074 B         | --              | --                  |
| AP7                        | JPM12-AP7(1)          | 200          | 0.018 B          | --              | --                  |
| AP8                        | JPM12-AP8(1)          | 180          | 0.0082 B         | --              | --                  |
| AP12                       | JPM12-AP12(1)         | 150          | 0.012 B          | --              | --                  |
| AP13                       | JPM12-AP13(1)         | 160          | 0.02 B           | --              | --                  |
| AP21                       | JPM12-AP21(1)         | 120          | 0.38             | --              | --                  |
| AP24                       | JPM12-AP24(1)         | 288          | 3.6              | --              | --                  |
| AP31                       | JPM12-AP31(1)         | 285          | 0.05 U           | --              | --                  |
| AP34                       | JPM12-AP34(1)         | 240          | 0.025 B          | --              | --                  |
| AP35                       | JPM12-AP35(1)         | 262          | 0.053            | --              | --                  |
| AP42                       | JPM12-AP42(1)         | 273          | 0.021 B          | --              | --                  |
| AP43                       | JPM12-AP43(1)         | 172          | 0.006 B          | --              | --                  |
| AP45                       | JPM12-AP45(1)         | 120          | 0.4              | --              | --                  |
| AP48                       | JPM12-AP48(1)         | 300          | 0.04 B           | --              | --                  |
| AP56                       | JPM12-AP56(1)         | 147          | 0.05 U           | --              | --                  |
| AP58                       | JPM12-AP58(1)         | 119          | 0.05 U           | --              | --                  |
| AP65                       | JPM12-AP65(1)         | 237          | 0.046 B          | --              | --                  |
| AP72                       | JPM12-AP72(1)         | 130          | 0.041 B          | --              | --                  |
| AP78                       | JPM12-AP78(1)         | 138          | 0.024 B          | --              | --                  |
| AP79                       | JPM12-AP79(1)         | 113          | 0.05 U           | --              | --                  |
| AP84                       | JPM12-AP84(1)         | 111          | 0.05 U           | --              | --                  |
| AP85                       | JPM12-AP85(1)         | 460          | 0.2              | --              | --                  |
| AP86                       | JPM12-AP86(1)         | 110          | 1.8              | --              | --                  |
| CP2                        | JPM12-CP2(1)          | 450          | 0.79             | --              | --                  |
| CP3                        | JPM12-CP3(1)          | 480          | 0.016 B          | --              | --                  |
| CP4                        | JPM12-CP4(1)          | 170          | 0.037 B          | --              | --                  |
| CP7                        | JPM12-CP7(.5)         | 132          | 0.05 U           | --              | --                  |
| CP8                        | JPM12-CP8(.5)         | 430          | 1.6              | --              | --                  |
| CP9                        | JPM12-CP9(.5)         | 172          | 0.011 B          | --              | --                  |



**Table 3-16**

**TCLP Metals Results  
Closure Report - Site L2, L5, L23A, M3, M4, and M12  
Phase 2 Remedial Action  
Joliet Army Ammunition Plant  
Wilmington, Illinois**

| Sample Designation          | Sample Identification | Lead (mg/kg) | TCLP Lead (mg/L) | Arsenic (mg/kg) | TCLP Arsenic (mg/L) |
|-----------------------------|-----------------------|--------------|------------------|-----------------|---------------------|
|                             | LRG                   | 500          | N/A              | 21              | N/A                 |
|                             | URG                   | 500          | N/A              | 84              | N/A                 |
|                             | RCRA                  | N/A          | 5                | N/A             | 5                   |
| <b>Site M12 (continued)</b> |                       |              |                  |                 |                     |
| CP11                        | JPM12-CP11(.5)        | 365          | 0.02 B           | --              | --                  |
| CP2                         | JPM12-DITCH-CP2(1)    | 430          | 0.11             | --              | --                  |
| CP5                         | JPM12-DITCH-CP5(1)    | 490          | 0.24             | --              | --                  |
| CP7                         | JPM12-DITCH-CP7(1)    | 250          | 0.12             | --              | --                  |
| CP8                         | JPM12-DITCH-CP8(1)    | 330          | 0.062            | --              | --                  |
| CP9                         | JPM12-DITCH-CP9(1)    | 170          | 0.019 B          | --              | --                  |
| CP10                        | JPM12-DITCH-CP10(1)   | 250          | 0.034 B          | --              | --                  |
| CP12                        | JPM12-DITCH-CP12(1)   | 410          | 0.084 B          | --              | --                  |
| CP13                        | JPM12-DITCH-CP13(1)   | 240          | 0.026 B          | --              | --                  |
| CP14                        | JPM12-DITCH-CP14(1)   | 360          | 0.024 B          | --              | --                  |
| CP15                        | JPM12-DITCH-CP15(1)   | 280          | 0.027 B          | --              | --                  |
| HUMP2                       | JPM12-HUMP2(1)        | 122          | 0.05 U           | --              | --                  |
| HUMP8                       | JPM12-HUMP8(1)        | 173          | 0.011 B          | --              | --                  |
| HUMP9                       | JPM12-HUMP9(1)        | 130          | 0.026 B          | --              | --                  |

Notes:

-- = not analyzed

LRG = lower remediation goal

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

N/A = not applicable

RCRA = Resource Conservation and Recovery Act

TCLP = toxicity characteristic leaching procedure

URG = upper remediation goal

Qualifiers:

B = The compound was also detected in the method blank.

J = Indicates an estimated value.

U = Indicates that the compound or analyte was analyzed for, but not detected at or above the stated limit.



Table 3-17

**Summary of Storm Water Sample Results**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

| Sample Location            | Sample Identification   | Date       | 1,3,5-Trinitrobenzene (µg/L) | 1,3-Dinitrobenzene (µg/L) | 2,4,6-Trinitrotoluene (µg/L) | 2,4-Dinitrotoluene (µg/L) | 2,6-Dinitrotoluene (µg/L) | 2-Amino-4,6-Dinitrotoluene (µg/L) | 2-Nitrotoluene (µg/L) | 3-Nitrotoluene (µg/L) | 4-Amino-2,6-Dinitrotoluene (µg/L) | 4-Nitrotoluene (µg/L) | HMX (µg/L) | Nitrobenzene (µg/L) | RDX (µg/L) | Tetryl (µg/L) | Antimony (mg/L) | Arsenic (mg/L) |
|----------------------------|-------------------------|------------|------------------------------|---------------------------|------------------------------|---------------------------|---------------------------|-----------------------------------|-----------------------|-----------------------|-----------------------------------|-----------------------|------------|---------------------|------------|---------------|-----------------|----------------|
| October 1998 ROD and ISWQS |                         |            | 15                           | 4                         | 75                           | 330                       | 150                       | NE                                | 62                    | NE                    | NE                                | NE                    | 260        | 8,000               | 500        | NE            | 610             | 160            |
| <b>Site L2</b>             |                         |            |                              |                           |                              |                           |                           |                                   |                       |                       |                                   |                       |            |                     |            |               |                 |                |
| L2-DS                      | JPL2-STORMWATER-DS2     | 4/12/2007  | 0.39 U                       | 0.39 U                    | 0.39 U                       | 0.39 U                    | 0.78 U                    | 0.78 U                            | 0.78 U                | 0.78 U                | 0.78 U                            | 0.78 U                | 0.78 U     | 0.39 U              | 0.39 U     | 0.78 U        | -               | 0.0034 B       |
| L2-US                      | JPL2-STORMWATER-US2     | 4/12/2007  | 0.53 U                       | 0.53 U                    | 0.53 U                       | 0.53 U                    | 1.1 U                     | 1.1 U                             | 1.1 U                 | 1.1 U                 | 1.1 U                             | 1.1 U                 | 1.1 U      | 0.53 U              | 0.53 U     | 1.1 U         | -               | 0.01 U         |
| L2-DS                      | JPL2-STORM-DS#3         | 4/25/2007  | 0.39 U                       | 0.39 U                    | 0.39 U                       | 0.39 U                    | 0.78 U                    | 0.78 U                            | 0.78 U                | 0.78 U                | 0.78 U                            | 0.78 U                | 0.78 U     | 0.39 U              | 0.39 U     | 0.78 U        | -               | 0.01 U         |
| L2-US                      | JPL2-STORM-US#3         | 4/25/2007  | 0.39 U                       | 0.39 U                    | 0.39 U                       | 0.39 U                    | 0.78 U                    | 0.78 U                            | 0.78 U                | 0.78 U                | 0.78 U                            | 0.78 U                | 0.78 U     | 0.39 U              | 0.39 U     | 0.78 U        | -               | 0.01 U         |
| L2-DS                      | JPL2-STORMWATER-DS#4    | 5/16/2007  | 0.39 U                       | 0.39 U                    | 0.39 U                       | 0.39 U                    | 0.78 U                    | 0.78 U                            | 0.78 U                | 0.78 U                | 0.78 U                            | 0.78 U                | 0.78 U     | 0.39 U              | 0.39 U     | 0.78 U        | -               | 0.01 U         |
| L2-US                      | JPL2-STORMWATER-US#4    | 5/16/2007  | 0.39 U                       | 0.39 U                    | 0.39 U                       | 0.39 U                    | 0.78 U                    | 0.78 U                            | 0.78 U                | 0.78 U                | 0.78 U                            | 0.78 U                | 0.78 U     | 0.39 U              | 0.39 U     | 0.78 U        | -               | 0.01 U         |
| L2-DS                      | JPL2-STORMWATER-DS#5    | 7/19/2007  | 0.0014 U                     | 0.0014 U                  | 0.0014 U                     | 0.0026 U                  | 0.0026 U                  | 0.0026 U                          | 0.0026 U              | 0.0026 U              | 0.0026 U                          | 0.0026 U              | 0.0026 U   | 0.0014 U            | 0.0014 U   | 0.0033 U      | -               | 0.01 U         |
| L2-US                      | JPL2-STORMWATER-US#5    | 7/19/2007  | 0.0014 U                     | 0.0014 U                  | 0.0014 U                     | 0.0026 U                  | 0.0026 U                  | 0.0026 U                          | 0.0026 U              | 0.0026 U              | 0.0026 U                          | 0.0026 U              | 0.0026 U   | 0.0014 U            | 0.0014 U   | 0.0033 U      | -               | 0.01 U         |
| <b>Site M3</b>             |                         |            |                              |                           |                              |                           |                           |                                   |                       |                       |                                   |                       |            |                     |            |               |                 |                |
| M3-DS                      | JPM3-GRANTCREEK DS#11   | 8/3/2006   | 0.39 U                       | 0.39 U                    | 0.39 U                       | 0.39 U                    | 0.78 U                    | 0.78 U                            | 0.78 U                | 0.78 U                | 0.78 U                            | 0.78 U                | 0.78 U     | 0.39 U              | 0.39 U     | 0.78 U        | 0.02 U          | 0.01 U         |
| M3-US                      | JPM3-GRANTCREEK US#11   | 8/3/2006   | 0.39 U                       | 0.39 U                    | 0.39 U                       | 0.39 U                    | 0.78 U                    | 0.78 U                            | 0.78 U                | 0.78 U                | 0.78 U                            | 0.78 U                | 0.78 U     | 0.39 U              | 0.39 U     | 0.78 U        | 0.02 U          | 0.0077 B       |
| M3-DS                      | JPM3-GRANTCREEK-DS#12   | 8/11/2006  | 0.51 U                       | 0.51 U                    | 0.51 U                       | 0.51 U                    | 1.0 U                     | 1.0 U                             | 1.0 U                 | 1.0 U                 | 1.0 U                             | 1.0 U                 | 1.0 U      | 0.51 U              | 0.51 U     | 1.0 U         | -               | -              |
| M3-US                      | JPM3-GRANTCREEK-US#12   | 8/11/2006  | 0.74 U                       | 0.74 U                    | 0.74 U                       | 0.74 U                    | 1.5 U                     | 1.5 U                             | 1.5 U                 | 1.5 U                 | 1.5 U                             | 1.5 U                 | 1.5 U      | 0.74 U              | 0.74 U     | 1.5 U         | -               | -              |
| M3-DS                      | JPM3-GRANTCREEK-DS#13   | 8/29/2006  | 0.46 U                       | 0.46 U                    | 0.46 U                       | 0.46 U                    | 0.91 U                    | 0.91 U                            | 0.91 U                | 0.91 U                | 0.91 U                            | 0.91 U                | 0.91 U     | 0.46 U              | 0.46 U     | 0.91 U        | 0.02 U          | 0.01 U         |
| M3-US                      | JPM3-GRANTCREEK-US#13   | 8/29/2006  | 0.39 U                       | 0.39 U                    | 0.39 U                       | 0.39 U                    | 0.78 U                    | 0.78 U                            | 0.78 U                | 0.78 U                | 0.78 U                            | 0.78 U                | 0.78 U     | 0.39 U              | 0.39 U     | 0.78 U        | 0.02 U          | 0.01 U         |
| M3-DS                      | JPM3-GRANTCREEK-DS#14   | 9/5/2006   | 0.39 U                       | 0.39 U                    | 0.39 U                       | 0.39 U                    | 0.78 U                    | 0.78 U                            | 0.78 U                | 0.78 U                | 0.78 U                            | 0.78 U                | 0.78 U     | 0.39 U              | 0.39 U     | 0.78 U        | 0.02 U          | 0.01 U         |
| M3-US                      | JPM3-GRANTCREEK-US#14   | 9/5/2006   | 0.39 U                       | 0.39 U                    | 0.39 U                       | 0.39 U                    | 0.78 U                    | 0.78 U                            | 0.78 U                | 0.78 U                | 0.78 U                            | 0.78 U                | 0.78 U     | 0.39 U              | 0.39 U     | 0.78 U        | 0.02 U          | 0.01 U         |
| M3-DS                      | JPM3-GRANTCREEK-DS#16   | 11/30/2006 | 0.39 U                       | 0.39 U                    | 0.39 U                       | 0.39 U                    | 0.78 U                    | 0.78 U                            | 0.78 U                | 0.78 U                | 0.78 U                            | 0.78 U                | 0.78 U     | 0.39 U              | 0.39 U     | 0.78 U        | 0.0034 B        | 0.0047 B       |
| M3-US                      | JPM3-GRANTCREEK-US#16   | 11/30/2006 | 0.39 U                       | 0.39 U                    | 0.39 U                       | 0.39 U                    | 0.78 U                    | 0.78 U                            | 0.78 U                | 0.78 U                | 0.78 U                            | 0.78 U                | 0.78 U     | 0.39 U              | 0.39 U     | 0.78 U        | 0.005 B         | 0.0047 B       |
| M3-DS                      | JPM3-GRANTCREEK-DS#1    | 1/5/2007   | 0.39 U                       | 0.39 U                    | 0.39 U                       | 0.39 U                    | 0.78 U                    | 0.78 U                            | 0.78 U                | 0.78 U                | 0.78 U                            | 0.78 U                | 0.78 U     | 0.39 U              | 0.39 U     | 0.78 U        | 0.0041 B        | 0.01 U         |
| M3-US                      | JPM3-GRANTCREEK-US#1    | 1/5/2007   | 0.39 U                       | 0.39 U                    | 0.39 U                       | 0.39 U                    | 0.78 U                    | 0.78 U                            | 0.78 U                | 0.78 U                | 0.78 U                            | 0.78 U                | 0.78 U     | 0.39 U              | 0.39 U     | 0.78 U        | 0.02 U          | 0.01 U         |
| <b>Site M4</b>             |                         |            |                              |                           |                              |                           |                           |                                   |                       |                       |                                   |                       |            |                     |            |               |                 |                |
| M4-DS                      | JPM4-DRAINAGEDITCH-DS#1 | 1/5/2007   | 0.39 U                       | 0.39 U                    | 0.39 U                       | 0.39 U                    | 0.78 U                    | 0.78 U                            | 0.78 U                | 0.78 U                | 0.78 U                            | 0.78 U                | 0.78 U     | 0.39 U              | 0.84       | 0.78 U        | -               | -              |
| M4-US                      | JPM4-DRAINAGEDITCH-US#1 | 1/5/2007   | 0.46 U                       | 0.46 U                    | 0.46 U                       | 0.46 U                    | 0.92 U                    | 0.92 U                            | 0.92 U                | 0.92 U                | 1                                 | 0.92 U                | 0.92 U     | 0.46 U              | 0.46 U     | 0.92 U        | -               | -              |
| M4-DS                      | JPM4-STORMWATER-DS#6    | 8/20/2007  | 0.0016 U                     | 0.0016 U                  | 0.0016 U                     | 0.0031 U                  | 0.0031 U                  | 0.0031 U                          | 0.0031 U              | 0.0031 U              | 0.0031 U                          | 0.0031 U              | 0.0031 U   | 0.0016 U            | 0.0016 U   | 0.0039 U      | -               | 0.010 U        |
| M4-US                      | JPM4-STORMWATER-US#6    | 8/20/2007  | 0.0013 U                     | 0.0013 U                  | 0.0013 U                     | 0.0025 U                  | 0.0025 U                  | 0.0025 U                          | 0.0025 U              | 0.0025 U              | 0.0025 U                          | 0.0025 U              | 0.0025 U   | 0.0013 U            | 0.0013 U   | 0.0031 U      | -               | 0.010 U        |
| <b>Site M12</b>            |                         |            |                              |                           |                              |                           |                           |                                   |                       |                       |                                   |                       |            |                     |            |               |                 |                |
| M12-LAGOON                 | JPM12-LAGOON            | 11/29/2006 | -                            | -                         | -                            | -                         | -                         | -                                 | -                     | -                     | -                                 | -                     | -          | -                   | -          | -             | -               | -              |
| M12-DITCH                  | JPM12-DITCH             | 11/29/2006 | -                            | -                         | -                            | -                         | -                         | -                                 | -                     | -                     | -                                 | -                     | -          | -                   | -          | -             | -               | -              |
| M12-LAGOON                 | JPM12-LAGOON-US#16      | 11/30/2006 | 0.44 U                       | 0.44 U                    | 0.44 U                       | 0.44 U                    | 0.87 U                    | 0.87 U                            | 0.87 U                | 0.87 U                | 0.87 U                            | 0.87 U                | 0.87 U     | 0.44 U              | 0.44 U     | 0.87 U        | -               | -              |
| M12-DITCH                  | JPM12-DITCH-DS#16       | 11/30/2006 | 0.39 U                       | 0.39 U                    | 0.39 U                       | 0.39 U                    | 0.78 U                    | 0.78 U                            | 0.78 U                | 0.78 U                | 0.78 U                            | 0.78 U                | 0.78 U     | 0.39 U              | 0.39 U     | 0.78 U        | -               | -              |



Table 3-17

**Summary of Storm Water Sample Results**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmington, Illinois**

| Sample Location            | Sample Identification   | Date       | Barium (mg/L) | Cadmium (mg/L) | Copper (mg/L) | Lead (µg/L) | Silver (mg/L) | Thallium (mg/L) | Zinc (mg/L) | Total Suspended Solids (mg/L) | Acenaphthene (µg/L) | Acenaphthylene (µg/L) | Anthracene (µg/L) | Benzo(a)anthracene <sup>1</sup> (µg/L) | Benzo(a)pyrene <sup>1</sup> (µg/L) | Benzo(b)fluoranthene <sup>1</sup> (µg/L) | Benzo(g,h,i)perylene (µg/L) | Benzo(k)fluoranthene (µg/L) |
|----------------------------|-------------------------|------------|---------------|----------------|---------------|-------------|---------------|-----------------|-------------|-------------------------------|---------------------|-----------------------|-------------------|--|------------------------------------|--|-----------------------------|-----------------------------|
| October 1998 ROD and ISWQS |                         |            | 5,000         | 2.3            | 26            | 64          | 5             | 20              | 1,000       | NE                            | 62                  | NE                    | 35,000            | 0.1                                    | 0.1                                | 0.1                                      | NE                          | 1                           |
| <b>Site L2</b>             |                         |            |               |                |               |             |               |                 |             |                               |                     |                       |                   |  |                                    |  |                             |                             |
| L2-DS                      | JPL2-STORMWATER-DS2     | 4/12/2007  | --            | 0.00046 B      | 0.013         | 8.5         | 0.005 U       | --              | 0.040       | 320                           | --                  | --                    | --                | --                                     | --                                 | --                                       | --                          | --                          |
| L2-US                      | JPL2-STORMWATER-US2     | 4/12/2007  | --            | 0.00059 B      | 0.016         | 11          | 0.005 U       | --              | 0.048       | 440                           | --                  | --                    | --                | --                                     | --                                 | --                                       | --                          | --                          |
| L2-DS                      | JPL2-STORM-DS#3         | 4/25/2007  | --            | 0.002 U        | 0.0038 B      | 3.5 B       | 0.0021 B      | --              | 0.018 B     | 68                            | --                  | --                    | --                | --                                     | --                                 | --                                       | --                          | --                          |
| L2-US                      | JPL2-STORM-US#3         | 4/25/2007  | --            | 0.002 U        | 0.0075 B      | 6.1         | 0.005 U       | --              | 0.031       | 180                           | --                  | --                    | --                | --                                     | --                                 | --                                       | --                          | --                          |
| L2-DS                      | JPL2-STORMWATER-DS#4    | 5/16/2007  | --            | 0.00042 B      | 0.01 U        | 7.5 U       | 0.005 U       | --              | 0.02 U      | 20                            | --                  | --                    | --                | --                                     | --                                 | --                                       | --                          | --                          |
| L2-US                      | JPL2-STORMWATER-US#4    | 5/16/2007  | --            | 0.002 U        | 0.0022 B      | 7.5 U       | 0.005 U       | --              | 0.02 U      | 7.5                           | --                  | --                    | --                | --                                     | --                                 | --                                       | --                          | --                          |
| L2-DS                      | JPL2-STORMWATER-DS#5    | 7/19/2007  | 0.062         | 0.002 U        | 0.0075 J      | 0.0043 J    | 0.005 U       | --              | 0.024 B     | 69                            | --                  | --                    | --                | --                                     | --                                 | --                                       | --                          | --                          |
| L2-US                      | JPL2-STORMWATER-US#5    | 7/19/2007  | 0.045         | 0.002 U        | 0.0025 J      | 0.005 U     | 0.0012 J      | --              | 0.014 JB    | 97                            | --                  | --                    | --                | --                                     | --                                 | --                                       | --                          | --                          |
| <b>Site M3</b>             |                         |            |               |                |               |             |               |                 |             |                               |                     |                       |                   |  |                                    |  |                             |                             |
| M3-DS                      | JPM3-GRANTCREEK DS#11   | 8/3/2006   | 0.065         | 0.002 U        | 0.0071 B      | 7.5 U       | 0.005 U       | 0.01 U          | 0.020       | 130                           | 0.94 U              | 0.94 U                | 0.94 U            | 0.11 U                                 | 0.15 U                             | 0.075 U                                  | 0.94 U                      | 0.19 U                      |
| M3-US                      | JPM3-GRANTCREEK US#11   | 8/3/2006   | 0.094         | 0.002 U        | 0.016         | 7.3 B       | 0.005 U       | 0.01 U          | 0.045       | 330                           | 0.93 U              | 0.93 U                | 0.93 U            | 0.11 U                                 | 0.15 U                             | 0.073 U                                  | 0.93 U                      | 0.19 U                      |
| M3-DS                      | JPM3-GRANTCREEK-DS#12   | 8/11/2006  | --            | --             | --            | 7.5 U       | --            | --              | --          | 32                            | 0.95 U              | 0.95 U                | 0.95 U            | 0.11 U                                 | 0.15 U                             | 0.075 U                                  | 0.95 U                      | 0.19 U                      |
| M3-US                      | JPM3-GRANTCREEK-US#12   | 8/11/2006  | --            | --             | --            | 7.5 U       | --            | --              | --          | 18                            | 0.93 U              | 0.93 U                | 0.93 U            | 0.11 U                                 | 0.15 U                             | 0.074 U                                  | 0.93 U                      | 0.19 U                      |
| M3-DS                      | JPM3-GRANTCREEK-DS#13   | 8/29/2006  | 0.06          | 0.002 U        | 0.0043 B      | 2.9 B       | 0.005 U       | 0.01 U          | 0.02        | 73                            | 0.94 U              | 0.94 U                | 0.94 U            | 0.11 U                                 | 0.15 U                             | 0.075 U                                  | 0.94 U                      | 0.19 U                      |
| M3-US                      | JPM3-GRANTCREEK-US#13   | 8/29/2006  | 0.06          | 0.002 U        | 0.0046 B      | 3.2 B       | 0.00098 B     | 0.01 U          | 0.015 B     | 61                            | 0.93 U              | 0.93 U                | 0.93 U            | 0.11 U                                 | 0.15 U                             | 0.074 U                                  | 0.93 U                      | 0.19 U                      |
| M3-DS                      | JPM3-GRANTCREEK-DS#14   | 9/5/2006   | 0.06          | 0.002 U        | 0.0065 B      | 4.1 B       | 0.005 U       | 0.01 U          | 0.018 B     | 100                           | 0.93 U              | 0.93 U                | 0.93 U            | 0.11 U                                 | 0.15 U                             | 0.074 U                                  | 0.93 U                      | 0.19 U                      |
| M3-US                      | JPM3-GRANTCREEK-US#14   | 9/5/2006   | 0.06          | 0.002 U        | 0.0054 B      | 7.5 U       | 0.005 U       | 0.01 U          | 0.016 B     | 77                            | 0.93 U              | 0.93 U                | 0.93 U            | 0.11 U                                 | 0.15 U                             | 0.074 U                                  | 0.93 U                      | 0.19 U                      |
| M3-DS                      | JPM3-GRANTCREEK-DS#16   | 11/30/2006 | 0.10          | 0.002 U        | 0.02          | 11          | 0.005 U       | 0.01 U          | 0.06        | 380                           | 0.99 U              | 0.99 U                | 0.99 U            | 0.12 U                                 | 0.16 U                             | 0.078 U                                  | 0.99 U                      | 0.2 U                       |
| M3-US                      | JPM3-GRANTCREEK-US#16   | 11/30/2006 | 0.10          | 0.002 U        | 0.02          | 10          | 0.005 U       | 0.01 U          | 0.064       | 390                           | 0.93 U              | 0.93 U                | 0.93 U            | 0.11 U                                 | 0.15 U                             | 0.074 U                                  | 0.93 U                      | 0.19 U                      |
| M3-DS                      | JPM3-GRANTCREEK-DS#1    | 1/5/2007   | 0.090         | 0.002 U        | 0.013         | 9.7         | 0.005 U       | 0.01 U          | 0.045       | 280                           | 0.95 U              | 0.95 U                | 0.95 U            | 0.11 U                                 | 0.15 U                             | 0.075 U                                  | 0.95 U                      | 0.19 U                      |
| M3-US                      | JPM3-GRANTCREEK-US#1    | 1/5/2007   | 0.080         | 0.002 U        | 0.010         | 8.6         | 0.005 U       | 0.01 U          | 0.040       | 200                           | 0.95 U              | 0.95 U                | 0.95 U            | 0.11 U                                 | 0.15 U                             | 0.075 U                                  | 0.95 U                      | 0.19 U                      |
| <b>Site M4</b>             |                         |            |               |                |               |             |               |                 |             |                               |                     |                       |                   |  |                                    |  |                             |                             |
| M4-DS                      | JPM4-DRAINAGEDITCH-DS#1 | 1/5/2007   | --            | --             | --            | 13          | --            | --              | --          | 6                             | --                  | --                    | --                | --                                     | --                                 | --                                       | --                          | --                          |
| M4-US                      | JPM4-DRAINAGEDITCH-US#1 | 1/5/2007   | --            | --             | --            | 7.5 U       | --            | --              | --          | 5.0 U                         | --                  | --                    | --                | --                                     | --                                 | --                                       | --                          | --                          |
| M4-DS                      | JPM4-STORMWATER-DS#6    | 8/20/2007  | --            | 0.0020 U       | 0.0067 J      | 11          | 0.0050 U      | --              | 0.036       | 95                            | --                  | --                    | --                | --                                     | --                                 | --                                       | --                          | --                          |
| M4-US                      | JPM4-STORMWATER-US#6    | 8/20/2007  | --            | 0.0020 U       | 0.0071 J      | 3.5         | 0.0050 U      | --              | 0.014 J     | 18                            | --                  | --                    | --                | --                                     | --                                 | --                                       | --                          | --                          |
| <b>Site M12</b>            |                         |            |               |                |               |             |               |                 |             |                               |                     |                       |                   |  |                                    |  |                             |                             |
| M12-LAGOON                 | JPM12-LAGOON            | 11/29/2006 | --            | --             | --            | --          | --            | --              | --          | --                            | --                  | --                    | --                | --                                     | --                                 | --                                       | --                          | --                          |
| M12-DITCH                  | JPM12-DITCH             | 11/29/2006 | --            | --             | --            | --          | --            | --              | --          | --                            | --                  | --                    | --                | --                                     | --                                 | --                                       | --                          | --                          |
| M12-LAGOON                 | JPM12-LAGOON-US#16      | 11/30/2006 | --            | --             | --            | 11          | --            | --              | --          | 73                            | --                  | --                    | --                | --                                     | --                                 | --                                       | --                          | --                          |
| M12-DITCH                  | JPM12-DITCH-DS#16       | 11/30/2006 | --            | --             | --            | 5.5 B       | --            | --              | --          | 26                            | --                  | --                    | --                | --                                     | --                                 | --                                       | --                          | --                          |



Table 3-17

**Summary of Storm Water Sample Results**  
**Closure Report - Sites L2, L5, L23A, M3, M4, and M12**  
**Phase 2 Remedial Action**  
**Joliet Army Ammunition Plant**  
**Wilmingon, Illinois**

| Sample Location            | Sample Identification   | Date       | Chrysene (µg/L) | Dibenzo(a,b)anthracene <sup>1</sup> (µg/L) | Fluoranthene (µg/L) | Fluorene (µg/L) | Indeno(1,2,3-cd)pyrene <sup>1</sup> (µg/L) | Naphthalene (µg/L) | Phenanthrene (µg/L) | Pyrene (µg/L) | Sulfate (mg/L) |
|----------------------------|-------------------------|------------|-----------------|--|---------------------|-----------------|--|--------------------|---------------------|---------------|----------------|
| October 1998 ROD and ISWQS |                         |            | 10              | 0.01                                       | 120                 | NE              | 0.00025                                    | 68                 | 3.7                 | 3,500         | 500            |
| <b>Site L2</b>             |                         |            |                 |  |                     |                 |  |                    |                     |               |                |
| L2-DS                      | JPL2-STORMWATER-DS2     | 4/12/2007  | --              | --   | --                  | --              | --   | --                 | --                  | --            | --             |
| L2-US                      | JPL2-STORMWATER-US2     | 4/12/2007  | --              | --   | --                  | --              | --   | --                 | --                  | --            | --             |
| L2-DS                      | JPL2-STORM-DS#3         | 4/25/2007  | --              | --   | --                  | --              | --   | --                 | --                  | --            | --             |
| L2-US                      | JPL2-STORM-US#3         | 4/25/2007  | --              | --   | --                  | --              | --   | --                 | --                  | --            | --             |
| L2-DS                      | JPL2-STORMWATER-DS#4    | 5/16/2007  | --              | --   | --                  | --              | --   | --                 | --                  | --            | --             |
| L2-US                      | JPL2-STORMWATER-US#4    | 5/16/2007  | --              | --   | --                  | --              | --   | --                 | --                  | --            | --             |
| L2-DS                      | JPL2-STORMWATER-DS#5    | 7/19/2007  | --              | --   | --                  | --              | --   | --                 | --                  | --            | --             |
| L2-US                      | JPL2-STORMWATER-US#5    | 7/19/2007  | --              | --   | --                  | --              | --   | --                 | --                  | --            | --             |
| <b>Site M3</b>             |                         |            |                 |  |                     |                 |  |                    |                     |               |                |
| M3-DS                      | JPM3-GRANTCREEK-DS#11   | 8/3/2006   | 0.47 U          | 0.17 U                                     | 0.94 U              | 0.94 U          | 0.18 U                                     | 0.94 U             | 0.94 U              | 0.94 U        | --             |
| M3-US                      | JPM3-GRANTCREEK-US#11   | 8/3/2006   | 0.46 U          | 0.17 U                                     | 0.93 U              | 0.93 U          | 0.18 U                                     | 0.93 U             | 0.93 U              | 0.93 U        | --             |
| M3-DS                      | JPM3-GRANTCREEK-DS#12   | 8/11/2006  | 0.48 U          | 0.17 U                                     | 0.95 U              | 0.95 U          | 0.18 U                                     | 0.95 U             | 0.95 U              | 0.95 U        | --             |
| M3-US                      | JPM3-GRANTCREEK-US#12   | 8/11/2006  | 0.47 U          | 0.17 U                                     | 0.93 U              | 0.93 U          | 0.18 U                                     | 0.93 U             | 0.93 U              | 0.93 U        | --             |
| M3-DS                      | JPM3-GRANTCREEK-DS#13   | 8/29/2006  | 0.47 U          | 0.17 U                                     | 0.94 U              | 0.94 U          | 0.18 U                                     | 0.94 U             | 0.94 U              | 0.94 U        | --             |
| M3-US                      | JPM3-GRANTCREEK-US#13   | 8/29/2006  | 0.47 U          | 0.17 U                                     | 0.93 U              | 0.93 U          | 0.18 U                                     | 0.93 U             | 0.93 U              | 0.93 U        | --             |
| M3-DS                      | JPM3-GRANTCREEK-DS#14   | 9/5/2006   | 0.47 U          | 0.17 U                                     | 0.93 U              | 0.93 U          | 0.18 U                                     | 0.93 U             | 0.93 U              | 0.93 U        | --             |
| M3-US                      | JPM3-GRANTCREEK-US#14   | 9/5/2006   | 0.47 U          | 0.17 U                                     | 0.93 U              | 0.93 U          | 0.18 U                                     | 0.93 U             | 0.93 U              | 0.93 U        | --             |
| M3-DS                      | JPM3-GRANTCREEK-DS#16   | 11/30/2006 | 0.5 U           | 0.18 U                                     | 0.99 U              | 0.99 U          | 0.19 U                                     | 0.99 U             | 0.99 U              | 0.99 U        | --             |
| M3-US                      | JPM3-GRANTCREEK-US#16   | 11/30/2006 | 0.47 U          | 0.17 U                                     | 0.93 U              | 0.93 U          | 0.18 U                                     | 0.93 U             | 0.93 U              | 0.93 U        | --             |
| M3-DS                      | JPM3-GRANTCREEK-DS#1    | 1/5/2007   | 0.48 U          | 0.17 U                                     | 0.95 U              | 0.95 U          | 0.18 U                                     | 0.95 U             | 0.95 U              | 0.95 U        | --             |
| M3-US                      | JPM3-GRANTCREEK-US#1    | 1/5/2007   | 0.48 U          | 0.17 U                                     | 0.95 U              | 0.95 U          | 0.18 U                                     | 0.95 U             | 0.95 U              | 0.95 U        | --             |
| <b>Site M4</b>             |                         |            |                 |  |                     |                 |  |                    |                     |               |                |
| M4-DS                      | JPM4-DRAINAGEDITCH-DS#1 | 1/5/2007   | --              | --   | --                  | --              | --   | --                 | --                  | --            | --             |
| M4-US                      | JPM4-DRAINAGEDITCH-US#1 | 1/5/2007   | --              | --   | --                  | --              | --   | --                 | --                  | --            | --             |
| M4-DS                      | JPM4-STORMWATER-DS#6    | 8/20/2007  | --              | --   | --                  | --              | --   | --                 | --                  | --            | --             |
| M4-US                      | JPM4-STORMWATER-US#6    | 8/20/2007  | --              | --   | --                  | --              | --   | --                 | --                  | --            | --             |
| <b>Site M12</b>            |                         |            |                 |  |                     |                 |  |                    |                     |               |                |
| M12-LAGOON                 | JPM12-LAGOON            | 11/29/2006 | --              | --   | --                  | --              | --   | --                 | --                  | --            | 22             |
| M12-DITCH                  | JPM12-DITCH             | 11/29/2006 | --              | --   | --                  | --              | --   | --                 | --                  | --            | 250            |
| M12-LAGOON                 | JPM12-LAGOON-US#16      | 11/30/2006 | --              | --   | --                  | --              | --   | --                 | --                  | --            | --             |
| M12-DITCH                  | JPM12-DITCH-DS#16       | 11/30/2006 | --              | --   | --                  | --              | --   | --                 | --                  | --            | --             |

**Notes:**<sup>1</sup> Result reported to the method detection limit

-- = not analyzed

DS = downstream

ISWQS = Illinois Surface Water Quality Standards

µg/L = micrograms per liter

mg/L = milligrams per liter

NE = not established

ROD = Record of Decision

US = upstream

**Qualifiers**

B = The compound was also detected in the method blank.

J = Indicates as estimated value.

U = Indicates that the compound or analyte was analyzed for, but not detected at or above the stated limit.

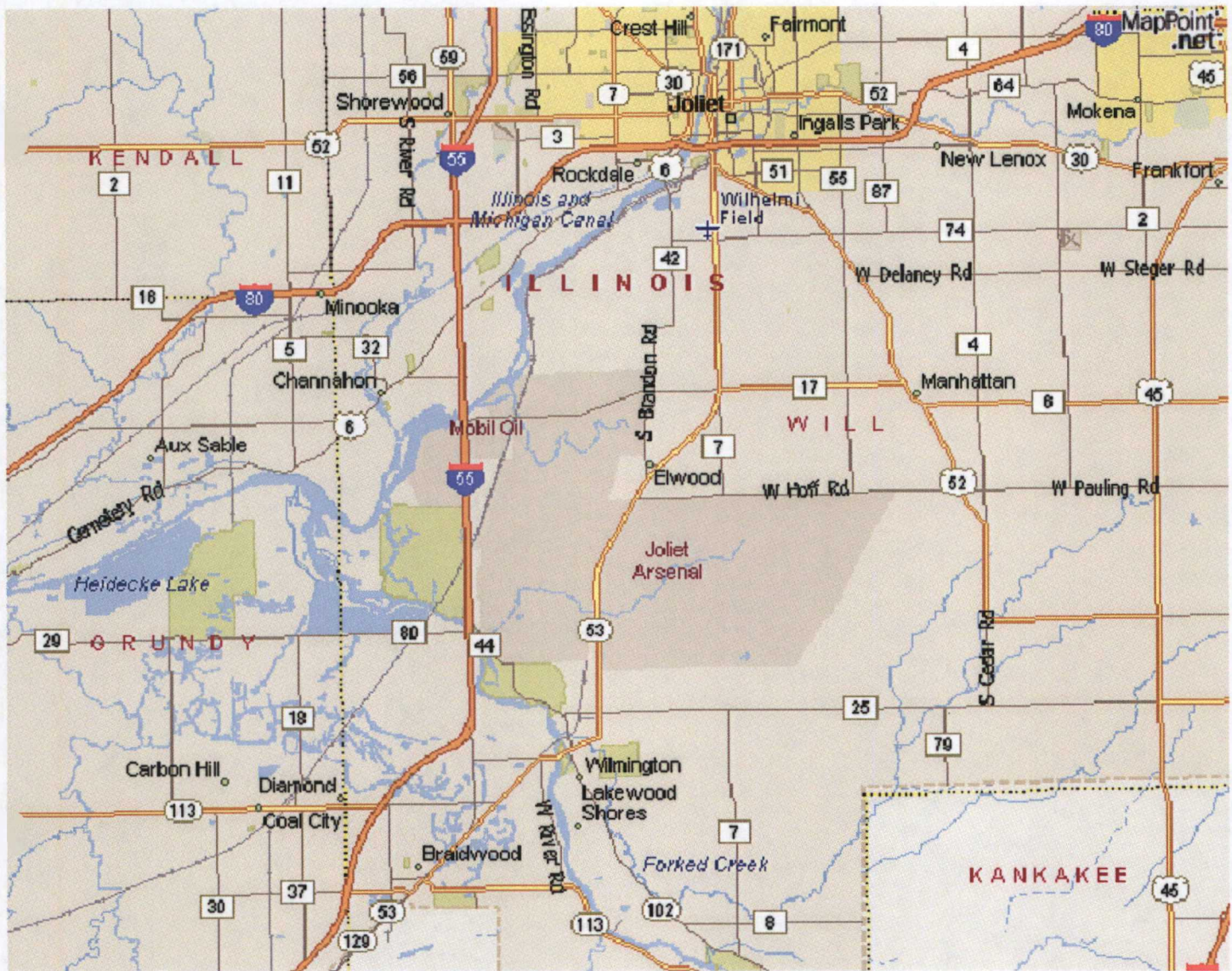


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## Figures

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**NOTE**


BASE MAP DEVELOPED FROM  
2002 MICROSOFT CORPORATION,  
EXPEDIA.COM.



|                     |                  |
|---------------------|------------------|
| LHP<br>DEVELOPED BY | DLF<br>DRAWN BY  |
| MGC<br>APPROVED BY  | 10/12/09<br>DATE |
| REVISIONS           | DATE             |

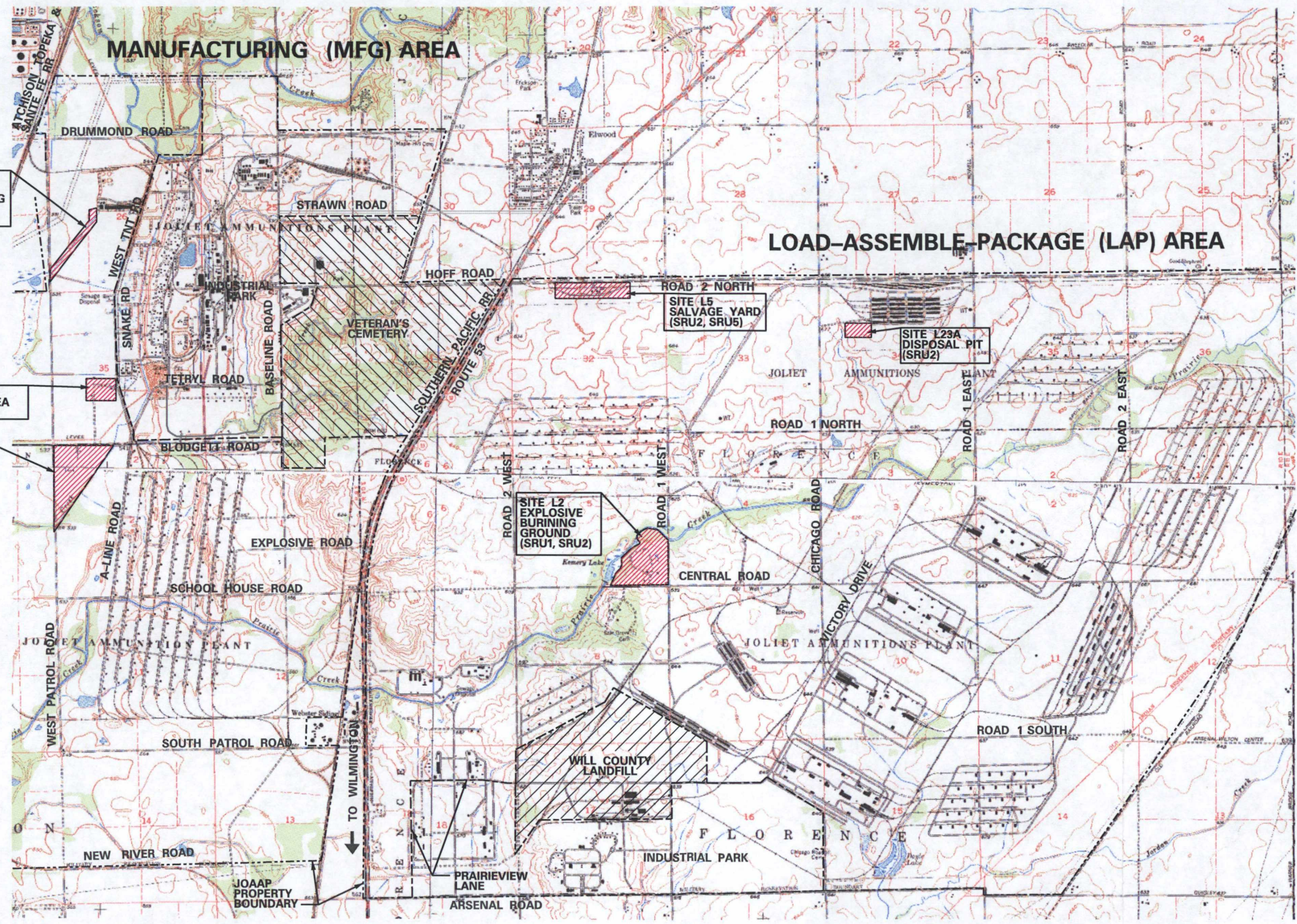
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|--|
| CONTRACT NO. DACW27-97-D-0015<br>TASK ORDER NO. 4016 |
| VERIFY SCALE<br>0 1/2 1<br>BAR REPRESENTS ONE INCH   |

|   |
|---|
| SITE LOCATION MAP   |
| CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12<br>PHASE 2 REMEDIAL ACTION<br>JOLIET ARMY AMMUNITION PLANT<br>WILMINGTON, ILLINOIS |

|  |
|--|
| FIGURE 1-1   |
|  <b>MWH</b> |



03/22/2020 11:41:20 AM  
User: dfridi  
Plot Date  
Model: Default  
Design: Script MWH Main Pentable VBS COI OR IN  
File: L:\JOBS\



|              |          |
|--------------|----------|
| LHP          | DLF      |
| DEVELOPED BY | DRAWN BY |
| MGC          | 10/12/09 |
| APPROVED BY  | DATE     |
| REVISIONS    | DATE     |

|                               |
|-------------------------------|
| CONTRACT NO. DACW27-97-D-0015 |
| TASK ORDER NO. 4016           |
| VERIFY SCALE                  |
| 0 1/2 1                       |
| BAR REPRESENTS ONE INCH       |

|            |
|------------|
| SCALE      |
| 1" = 3500' |

**JOAAP SITE MAP**  
CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12  
PHASE 2 REMEDIAL ACTION  
JOLIET ARMY AMMUNITION PLANT  
WILMINGTON, ILLINOIS



J9 11:28:22 AM  
Plot Date:  
User: dfrdrci  
A  
J:\22\020\000\000\Figure 1-3.dgn Model: Default DesignScript: MWH-Matrx-Pentable\_VB5\_C01.08.tbl PlotScale: 300.00  
File: L:\JOBS\2

SITE PREPARATION:

1. INSTALLATION OF SILT FENCE WILL BE AT DISCRETION OF CONSTRUCTION SUPERINTENDENT BASED UPON SITE CONDITIONS PRIOR TO EXCAVATION AND RESULTS OF PRE-EXCAVATION SAMPLING. INSTALL SILT FENCE IN ACCORDANCE WITH MANUFACTURERS WRITTEN DIRECTIONS, SPEC. SECTION 02276, AND THE SILT FENCE INSTALLATIONDETAIL.
2. INSTALLATION OF ROCKCHECK DAM WILL BE AT DISCRETION OF CONSTRUCTION SUPERINTENDENT BASED UPON SITE CONDITIONS PRIOR TO EXCAVATION AND RESULTS OF PRE-EXCAVATION SAMPLING. ROCK CHECK DAMS TO BE INSTALLED ACCORDING TO INSTALLATIONDETAIL.
3. LOCATION OF MOBILE EQUIPMENT DECONTAMINATION PAD WILL BE AT THE DISCRETION OF CONSTRUCTION SUPERINTENDENT PRIOR TO EXCAVATIONACTIVITIES.
4. TEMPORARY ROAD WILL BE CONSTRUCTED, IF NECESSARY, TO LOCATIONS OF CONTAMINATION BY GRADING ON-SITE MATERIAL, OR PLACING 2-INCH DIAMETER STONE AS REQUIRED.
5. TEST KIT ANALYSIS AND XRF UNIT WILL BE UTILIZED ON SOIL FROM AREAS DESIGNATED FOR EXCAVATION AND SCREENING TO CONFIRM PRESENCE OF EXPLOSIVES AND METALS IN SOIL.
6. CHARACTERIZATION SAMPLING WILL BE CONDUCTED IN THE POPPING FURNACE AREA TO IDENTIFY THE PRESENCE OF TCLP CHARACTERISTIC WASTE.
7. MEC CLEARANCE ACTIVITIES WILL BE COMPLETED AT THE SITE PRIOR TO MOBILIZATION OF RA ACTIVITIES. MEC CLEARANCE ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH APPROVED ESS PLAN.
8. SAMPLING ACTIVITIES WILL BE CONDUCTED AT THE EAST-WEST BURN PADS TO VERIFY THAT ARSENIC IS PRESENT IN SURFACE SOILS AT LEVELS LESS THAN THE ESTABLISHED LRG (21 mg/kg). ONE SOIL SAMPLE FROM 0 TO 1 FOOT WILL BE COLLECTED FROM EACH QUADRANT OF THE BURN PADS. THE FOUR ALIQUOTS WILL BE COMPOSITED INTO ONE SAMPLE AND SUBMITTED FOR LABORATORY ANALYSIS TO VERIFY THAT THE ARSENIC CONCENTRATIONS ARE LESS THAN OR EQUAL TO 21 mg/kg. IF SAMPLE RESULTS INDICATE CONCENTRATIONS GREATER THAN 21 mg/kg, THEN ADDITIONAL SAMPLING WILL BE CONDUCTED TO ISOLATE ELEVATED ARSENIC CONCENTRATIONS WITHIN THE BURN PADS. APPROPRIATE RA ACTIVITIES WILL BE CONDUCTED AS NECESSARY TO ADDRESS IMPACTED AREAS.

SOIL EXCAVATION:

1. MWH WILL DELINEATE THE PROPOSED LIMITS OF EXCAVATION.
2. EXCAVATE SOIL WITHIN LIMITS OF EXCAVATION TO THE DEPTH SHOWN. PLACE EXCAVATED SOIL PNTO TRUCKS FOR TRANSPORT TO THE BIOREMEDIATION TREATMENT FACILITY (SRU1 SOILS) OR TO THE APPROVED OFF-SITE DISPOSAL FACILITY (SRU2 SOILS).
3. FOLLOWING COMPLETION OF EXCAVATION ACTIVITIES, CONFIRMATION SAMPLES WILL BE OBTAINED AS DESCRIBED IN THE PHASE 2 - SAMPLING AND ANALYSIS PLAN.
4. IF ADDITIONAL EXCAVATIONIS REQUIRED, EXCAVATEIN 6 IN INCREMENTS UNTIL SAMPLING INDICATES THAT REQUIRED LRG AND URG CRITERIA HAVE BEEN ACHIEVED.
5. REMOVE CONCRETE FLOOR SLABS AS REQUIRED DURING EXCAVATION. CONTAMINATED CONCRETE WILL BE DISPOSED AT AN APPROPRIATE OFFSITE FACILITY. CLEAN CONCRETE WILL EITHER BE DISPOSED AT AN APPROPRIATE OFFSITE FACILITY, OR USED AS BACKFILL IN EXCAVATIONSAT THE SITE.
6. SOIL FROM THE EAST-WEST BURN PADS WILL BE SAMPLED FOR EXPLOSIVES FOLLOWING MECHANICAL SCREENING OPERATIONS FOR MUNITIONS AND EXPLOSIVES OF CONCERN. ESTIMATED VOLUME OF SOIL REQUIRING MECHANICAL SCREENING = 16,000 CUBIC YARDS. SOIL THAT DOES NOT MEET LRG AND URG CRITERIA FOR SRU1 SOILS OVER THE AREA OF EXCAVATION WILL BE TRANSPORTED, AS NECESSARY, TO THE SITE M4 BIOREMEDIATION FACILITY FOR TREATMENT. ESTIMATED VOLUME OF SOIL REQUIRING TREATMENT = 10,000 CUBIC YARDS.
7. MEC IDENTIFICATION/AVOIDANCE OVERSIGHT WILL BE PROVIDED ON-SITE DURING EXCAVATION ACTIVITIES.
8. MEC DISPOSAL WILL BE CONDUCTED IN ACCORDANCE WITH THE PROTOCOL ESTABLISHED IN THE APPROVED EXPLOSIVES SAFETY SUBMISSION.

BACKFILLING AND RESTORATION:

1. UPON VERIFICATION THAT LRG AND URG CRITERIA HAVE BEEN ACHIEVED, GRADE EXCAVATIONWITH SURROUNDING MATERIAL TO PROMOTE PROPER DRAINAGE.
2. ONCE GRASS IS ESTABLISHED TO A HEIGHT OF 4 INCHES, REMOVE SILT FENCE (IF INSTALLED AT SITE).
3. BACKFILLING WILL BE CONDUCTED IN ACCORDANCE WITH SPEC. SECTION 02220.
4. TEMPORARY ROADS CONSTRUCTED FOR RA ACTIVATESWILL BE REMOVED, AS REQUIRED, FOLLOWING THE COMPLETION OF CONSTRUCTION/HAULING ACTIVITIES AT THE SITE.

EQUIPMENT DECONTAMINATION

1. EQUIPMENT WILL BE CLEANED, AS REQUIRED, ON EQUIPMENT DECONTAMINATION PAD TO REMOVE SOIL PARTICLES IN ACCORDANCE WITH SPEC. SECTION 01560.
2. ONCE EXCAVATION IS COMPLETED AND ALL EQUIPMENT IS DECONTAMINATED, MOBILE DECONTAMINATION PADS WILL BE PROPERLY DEMOBILIZED AND MOVED TO ANOTHER PHASE 2 RA SITE FOR REUSE, OR DISPOSED AT AN APPROPRIATE OFFSITE FACILITY.

LEGEND

× × FENCE LINE

SRU1 SOILS

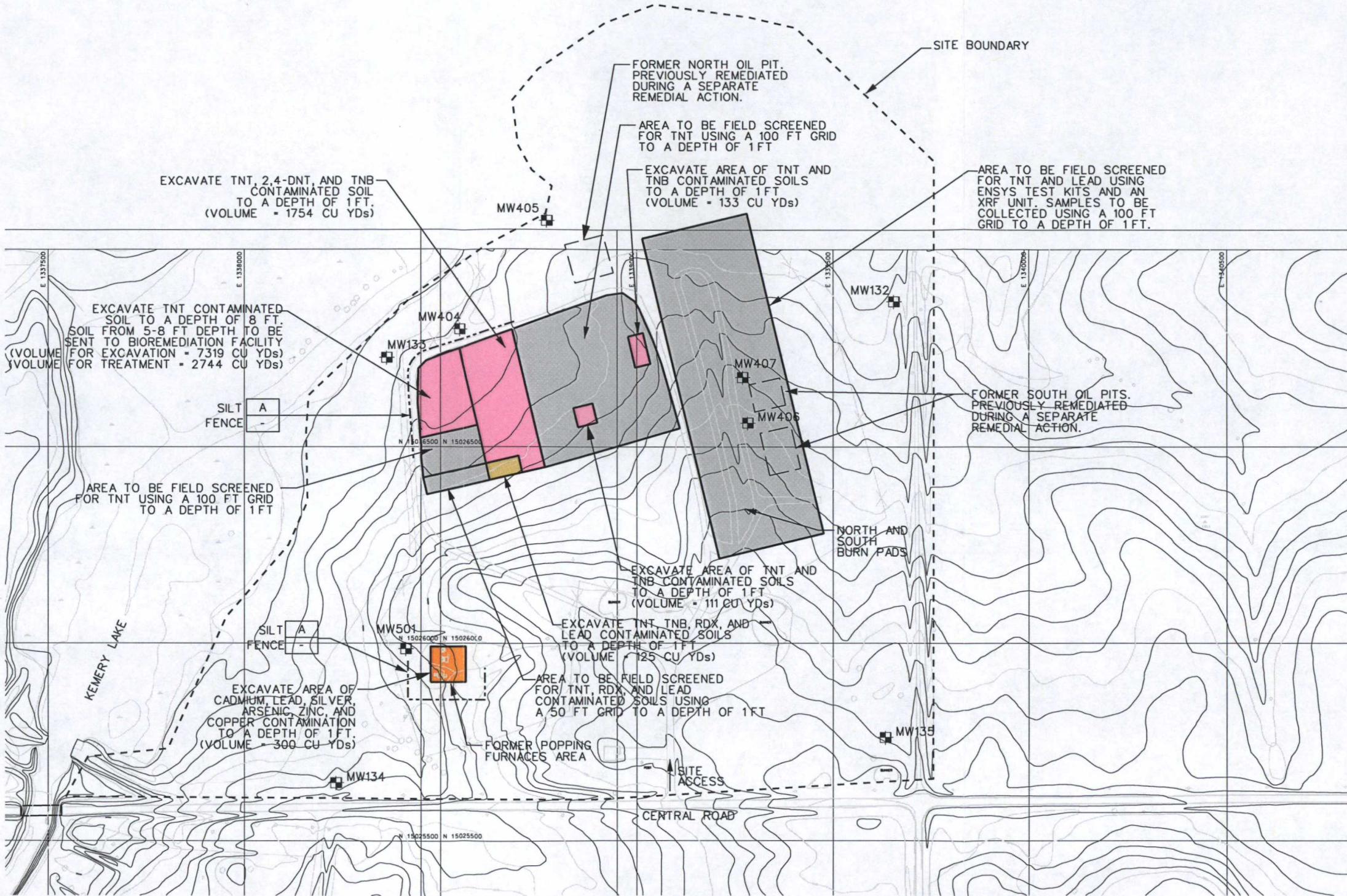
SRU2 SOILS

AREA TO BE FIELD SCREENED AND SAMPLED FOR POTENTIALLY IMPACTED SOILS

SRU1 AND SRU2 SOILS

MW132 MONITORING WELL LOCATION AND NUMBER

SILT FENCE



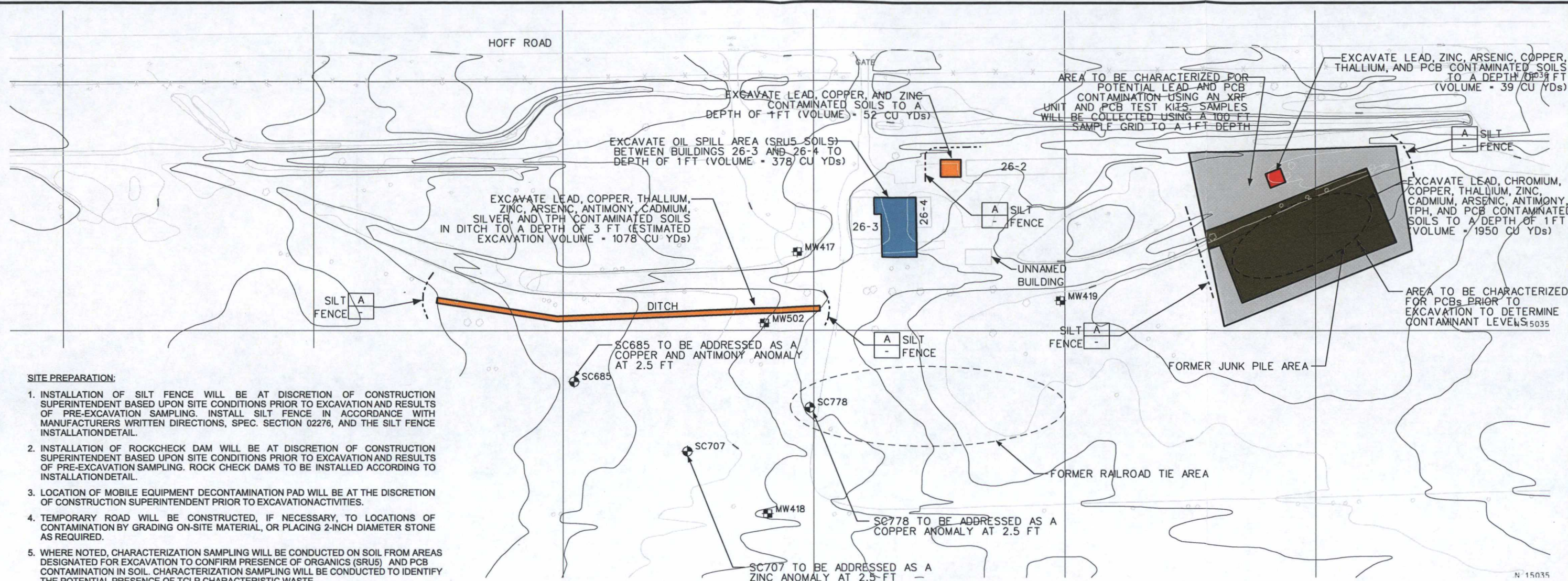
|              |          |
|--------------|----------|
| LHP          | DLF      |
| DEVELOPED BY | DRAWN BY |
| MGC          | 10/12/09 |
| APPROVED BY  | DATE     |
| REVISIONS    | DATE     |

|                               |
|-------------------------------|
| CONTRACT NO. DACW27-97-D-0015 |
| TASK ORDER NO. 4016           |
| VERIFY SCALE                  |
| 0 1/2 1                       |
| BAR REPRESENTS ONE INCH       |

|  |
|--|
| SITE L2 - REMEDIAL DESIGN PLAN                       |
| CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12 |
| PHASE 2 REMEDIAL ACTION                              |
| JOLIET ARMY AMMUNITION PLANT                         |
| WILMINGTON, ILLINOIS                                 |

|            |
|------------|
| FIGURE 1-3 |
| MWH        |



**SITE PREPARATION:**

1. INSTALLATION OF SILT FENCE WILL BE AT DISCRETION OF CONSTRUCTION SUPERINTENDENT BASED UPON SITE CONDITIONS PRIOR TO EXCAVATION AND RESULTS OF PRE-EXCAVATION SAMPLING. INSTALL SILT FENCE IN ACCORDANCE WITH MANUFACTURERS WRITTEN DIRECTIONS, SPEC. SECTION 02276, AND THE SILT FENCE INSTALLATION DETAIL.
2. INSTALLATION OF ROCKCHECK DAM WILL BE AT DISCRETION OF CONSTRUCTION SUPERINTENDENT BASED UPON SITE CONDITIONS PRIOR TO EXCAVATION AND RESULTS OF PRE-EXCAVATION SAMPLING. ROCK CHECK DAMS TO BE INSTALLED ACCORDING TO INSTALLATION DETAIL.
3. LOCATION OF MOBILE EQUIPMENT DECONTAMINATION PAD WILL BE AT THE DISCRETION OF CONSTRUCTION SUPERINTENDENT PRIOR TO EXCAVATION ACTIVITIES.
4. TEMPORARY ROAD WILL BE CONSTRUCTED, IF NECESSARY, TO LOCATIONS OF CONTAMINATION BY GRADING ON-SITE MATERIAL, OR PLACING 2-INCH DIAMETER STONE AS REQUIRED.
5. WHERE NOTED, CHARACTERIZATION SAMPLING WILL BE CONDUCTED ON SOIL FROM AREAS DESIGNATED FOR EXCAVATION TO CONFIRM PRESENCE OF ORGANICS (SRU5) AND PCB CONTAMINATION IN SOIL. CHARACTERIZATION SAMPLING WILL BE CONDUCTED TO IDENTIFY THE POTENTIAL PRESENCE OF TCLP CHARACTERISTIC WASTE.
6. XRF UNIT WILL BE UTILIZED TO DELINEATE APPROXIMATE BOUNDARIES OF METALS CONTAMINATED SOILS PRIOR TO EXCAVATION.
7. ANOMALY LOCATIONS WILL BE ADDRESSED AS DESCRIBED IN SECTION 3.3.12 OF THE PHASE 2 RD/RA WORKPLAN.

**SOIL EXCAVATION:**

1. MWH WILL DELINEATE THE PROPOSED LIMITS OF EXCAVATION
2. EXCAVATE SOIL WITHIN LIMITS OF EXCAVATION TO THE DEPTH SHOWN. PLACE EXCAVATED SOIL INTO TRUCKS FOR TRANSPORT TO AN APPROVED OFF-SITE DISPOSAL FACILITY.
3. FOLLOWING COMPLETION OF EXCAVATION ACTIVITIES, CONFIRMATION SAMPLES WILL BE OBTAINED AS DESCRIBED IN THE PHASE 2 - SAMPLING AND ANALYSIS PLAN.
4. SRU5 (ORGANICS) EXCAVATION CONFIRMATION SAMPLES WILL BE ANALYZED FOR POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) IN ACCORDANCE WITH THE JUNE 2004 ROD.
5. IF ADDITIONAL EXCAVATION IS REQUIRED, EXCAVATE IN 6 IN INCREMENTS UNTIL SAMPLING INDICATES THAT REQUIRED LRG AND URG CRITERIA HAVE BEEN ACHIEVED.

**BACKFILLING AND RESTORATION:**

1. UPON VERIFICATION THAT LRG AND URG CRITERIA HAVE BEEN ACHIEVED, GRADE EXCAVATION WITH SURROUNDING MATERIAL TO PROMOTE PROPER DRAINAGE.
2. ONCE GRASS IS ESTABLISHED TO A HEIGHT OF 4 INCHES, REMOVE SILT FENCE (IF INSTALLED AT SITE).
3. BACKFILLING WILL BE CONDUCTED IN ACCORDANCE WITH SPEC. SECTION 02220.
4. TEMPORARY ROADS CONSTRUCTED FOR RA ACTIVITIES WILL BE REMOVED, AS REQUIRED, FOLLOWING THE COMPLETION OF CONSTRUCTION/HAULING ACTIVITIES AT THE SITE.

**EQUIPMENT DECONTAMINATION**

1. EQUIPMENT WILL BE CLEANED, AS REQUIRED, ON EQUIPMENT DECONTAMINATION PAD TO REMOVE SOIL PARTICLES IN ACCORDANCE WITH SPEC. SECTION 01560.
2. ONCE EXCAVATION IS COMPLETED AND ALL EQUIPMENT IS DECONTAMINATED, MOBILE DECONTAMINATION PADS WILL BE PROPERLY DEMOBILIZED AND MOVED TO ANOTHER PHASE 2 RA SITE FOR REUSE, OR DISPOSED AT AN APPROPRIATE OFFSITE FACILITY.

**LEGEND**

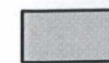
SRU2 SOILS



SRU5 SOILS



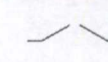
SRU2, SRU5, AND PCB CONTAMINATED SOILS



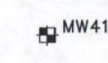
FRINGE AREA TO BE FIELD SCREENED FOR POTENTIALLY IMPACTED SOIL



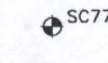
SRU2 AND PCB CONTAMINATED SOILS



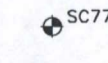
GATE



FENCE LINE



MW417 MONITORING WELL LOCATION AND NUMBER



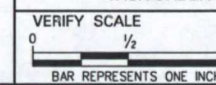
SC778 PHASE 1 REMEDIAL INVESTIGATION SAMPLE LOCATION



SILT FENCE



|              |          |
|--------------|----------|
| LHP          | DLF      |
| DEVELOPED BY | DRAWN BY |
| MGC          | 10/12/09 |
| APPROVED BY  | DATE     |
| REVISIONS    | DATE     |

CONTRACT NO. DACW27-97-D-0015  
TASK ORDER NO. 4016SCALE  
1" = 200'**SITE L5 - REMEDIAL DESIGN PLAN**CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12  
PHASE 2 REMEDIAL ACTION  
JOLIET ARMY AMMUNITION PLANT  
WILMINGTON, ILLINOIS**FIGURE 1-4**



09 11:35:02 AM  
Plot Date  
User: dlfrdr  
in  
3322\0201\cond\figure 1-5.dgn Model: Default DesignScript: MWH\_Matn\_Pentable\_V85\_COLOR.tbl PlotScale: 200.00  
File: L:\JOBS\2

**SITE PREPARATION:**

1. INSTALLATION OF SILT FENCE WILL BE AT DISCRETION OF CONSTRUCTION SUPERINTENDENT BASED UPON SITE CONDITIONS PRIOR TO EXCAVATION AND RESULTS OF PRE-EXCAVATION SAMPLING. INSTALL SILT FENCE IN ACCORDANCE WITH MANUFACTURERS WRITTEN DIRECTIONS, SPEC. SECTION 02276, AND THE SILT FENCE INSTALLATION DETAIL.
2. INSTALLATION OF ROCKCHECK DAM WILL BE AT DISCRETION OF CONSTRUCTION SUPERINTENDENT BASED UPON SITE CONDITIONS PRIOR TO EXCAVATION AND RESULTS OF PRE-EXCAVATION SAMPLING. ROCK CHECK DAMS TO BE INSTALLED ACCORDING TO INSTALLATION DETAIL.
3. LOCATION OF MOBILE EQUIPMENT DECONTAMINATION PAD WILL BE AT THE DISCRETION OF CONSTRUCTION SUPERINTENDENT PRIOR TO EXCAVATION ACTIVITIES.
4. TEMPORARY ROAD WILL BE CONSTRUCTED, IF NECESSARY, TO LOCATIONS OF CONTAMINATION BY GRADING ON-SITE MATERIAL, OR PLACING 2-INCH DIAMETER STONE AS REQUIRED.
5. VISUAL OBSERVATION AND XRF UNIT ANALYSIS WILL BE CONDUCTED OVER DESIGNATED EXCAVATION AREAS TO DETERMINE LOCATION OF POTENTIAL METALS CONTAMINATION.

**SOIL EXCAVATION:**

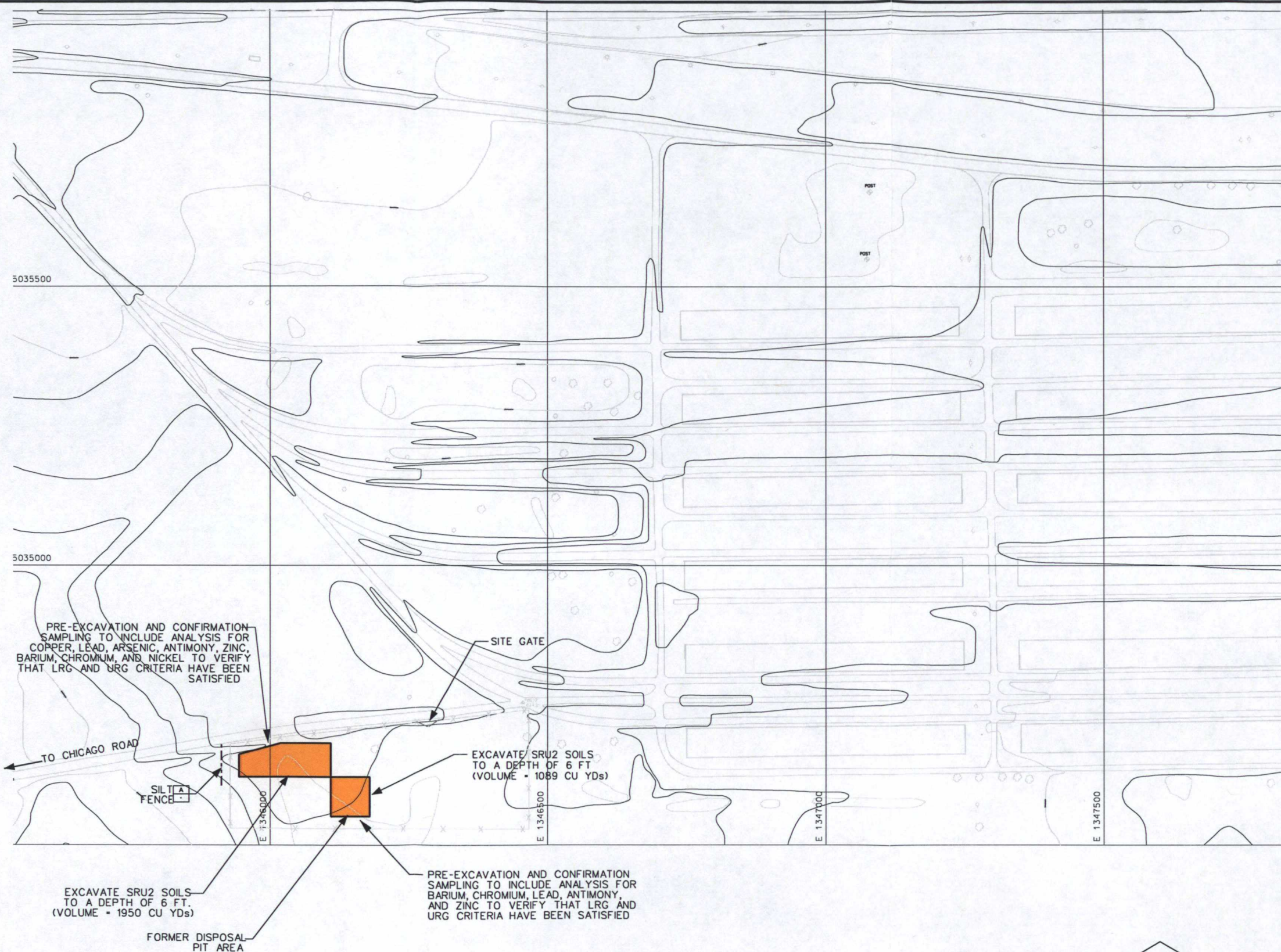
1. MWH WILL DELINEATE THE PROPOSED LIMITS OF EXCAVATION.
2. EXCAVATE SOIL WITHIN LIMITS OF EXCAVATION TO THE DEPTH SHOWN. PLACE EXCAVATED SOIL INTO TRUCKS FOR TRANSPORT TO AN APPROVED OFF-SITE DISPOSAL FACILITY.
3. FOLLOWING COMPLETION OF EXCAVATION ACTIVITIES, CONFIRMATION SAMPLES WILL BE OBTAINED AS DESCRIBED IN THE PHASE 2 - SAMPLING AND ANALYSIS PLAN.
4. IF ADDITIONAL EXCAVATION IS REQUIRED, EXCAVATE IN 6 IN INCREMENTS UNTIL SAMPLING INDICATES THAT REQUIRED LRG AND URG CRITERIA HAVE BEEN ACHIEVED.

**BACKFILLING AND RESTORATION:**

1. UPON VERIFICATION THAT LRG AND URG CRITERIA HAVE BEEN ACHIEVED, GRADE EXCAVATION WITH SURROUNDING MATERIAL TO PROMOTE PROPER DRAINAGE.
2. ONCE GRASS IS ESTABLISHED TO A HEIGHT OF 4 INCHES, REMOVE SILT FENCE (IF INSTALLED AT SITE).
3. BACKFILLING WILL BE CONDUCTED IN ACCORDANCE WITH SPEC. SECTION 02220.
4. TEMPORARY ROADS CONSTRUCTED FOR RA ACTIVATES WILL BE REMOVED, AS REQUIRED, FOLLOWING THE COMPLETION OF CONSTRUCTION/HAULING ACTIVITIES AT THE SITE.

**EQUIPMENT DECONTAMINATION**

1. EQUIPMENT WILL BE CLEANED, AS REQUIRED, ON EQUIPMENT DECONTAMINATION PAD TO REMOVE SOIL PARTICLES IN ACCORDANCE WITH SPEC. SECTION 01560.
2. ONCE EXCAVATION IS COMPLETED AND ALL EQUIPMENT IS DECONTAMINATED, MOBILE DECONTAMINATION PADS WILL BE PROPERLY DEMOBILIZED AND MOVED TO ANOTHER PHASE 2 RA SITE FOR REUSE, OR DISPOSED AT AN APPROPRIATE OFFSITE FACILITY.



**LEGEND**

- SRU2 SOILS
- FENCE LINE
- GATE
- SILT FENCE



|                     |                  |
|---------------------|------------------|
| LHP<br>DEVELOPED BY | DLF<br>DRAWN BY  |
| MCC<br>APPROVED BY  | 10/12/09<br>DATE |
| REVISIONS           | DATE             |

|  |
|--|
| CONTRACT NO. DACW27-97-D-0015<br>TASK ORDER NO. 4016 |
| VERIFY SCALE<br>0 1/2 1<br>BAR REPRESENTS ONE INCH   |
| SCALE<br>1" = 200'                                   |

|   |                   |
|---|-------------------|
| <b>SITE L23A - REMEDIAL DESIGN PLAN</b>   | <b>FIGURE 1-5</b> |
| CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12<br>PHASE 2 REMEDIAL ACTION<br>JOLIET ARMY AMMUNITION PLANT<br>WILMINGTON, ILLINOIS |                   |



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Plot Date  
User: dlfredr  
in  
032A.0201\cadd\Figure 1-6a.dgn Model: Default DesignScript: MWH\_Matn\_Pentable\_VB5\_COLOR.tbl PlotScale: 150.0  
File: L:\J085\2

**SITE PREPARATION:**

1. INSTALLATION OF SILT FENCE WILL BE AT DISCRETION OF CONSTRUCTION SUPERINTENDENT BASED UPON SITE CONDITIONS PRIOR TO EXCAVATION AND RESULTS OF PRE-EXCAVATION SAMPLING. INSTALL SILT FENCE IN ACCORDANCE WITH MANUFACTURERS WRITTEN DIRECTIONS, SPEC. SECTION 02276, AND THE SILT FENCE INSTALLATION DETAIL.
2. INSTALLATION OF ROCKCHECK DAM WILL BE AT DISCRETION OF CONSTRUCTION SUPERINTENDENT BASED UPON SITE CONDITIONS PRIOR TO EXCAVATION AND RESULTS OF PRE-EXCAVATION SAMPLING. ROCK CHECK DAMS TO BE INSTALLED ACCORDING TO INSTALLATION DETAIL.
3. LOCATION OF MOBILE EQUIPMENT DECONTAMINATION PAD WILL BE AT THE DISCRETION OF CONSTRUCTION SUPERINTENDENT PRIOR TO EXCAVATION ACTIVITIES.
4. TEMPORARY ROAD WILL BE CONSTRUCTED, IF NECESSARY, TO LOCATIONS OF CONTAMINATION BY GRADING ON-SITE MATERIAL, OR PLACING 2-INCH DIAMETER STONE AS REQUIRED.
5. TEST KITS, XRF UNIT, AND LABORATORY ANALYSIS WILL BE UTILIZED ON SOIL FROM AREAS DESIGNATED FOR CHARACTERIZATION TO CONFIRM PRESENCE OF LEAD, TNT, AND PAHs IN SOIL WITHIN THE FENCED AREA.

**SOIL EXCAVATION:**

1. MWH WILL DELINEATE THE PROPOSED LIMITS OF EXCAVATION.
2. EXCAVATE SOIL WITHIN LIMITS OF EXCAVATION TO THE DEPTH SHOWN. PLACE EXCAVATED SOIL INTO TRUCKS FOR DISPOSAL AT AN APPROVED OFF SITE FACILITY.
3. FOLLOWING COMPLETION OF EXCAVATION ACTIVITIES, CONFIRMATION SAMPLES WILL BE OBTAINED AS DESCRIBED IN THE PHASE 2 - SAMPLING AND ANALYSIS PLAN.
4. IF ADDITIONAL EXCAVATION IS REQUIRED, EXCAVATE IN 6 IN INCREMENTS UNTIL SAMPLING INDICATES THAT REQUIRED LRG AND URG CRITERIA HAVE BEEN ACHIEVED.
5. CHARACTERIZATION SAMPLING WILL BE CONDUCTED, AS NECESSARY, TO IDENTIFY THE PRESENCE OF TCLP CHARACTERISTIC WASTE DURING EXCAVATION ACTIVITIES.

**BACKFILLING AND RESTORATION:**

1. UPON VERIFICATION THAT LRG AND URG CRITERIA HAVE BEEN ACHIEVED, GRADE EXCAVATION WITH SURROUNDING MATERIAL TO PROMOTE PROPER DRAINAGE.
2. ONCE GRASS IS ESTABLISHED TO A HEIGHT OF 4 INCHES, REMOVE SILT FENCE (IF INSTALLED AT SITE).
3. BACKFILLING WILL BE CONDUCTED IN ACCORDANCE WITH SPEC. SECTION 02220.
4. TEMPORARY ROADS CONSTRUCTED FOR RA ACTIVITIES WILL BE REMOVED, AS REQUIRED, FOLLOWING THE COMPLETION OF CONSTRUCTION/HAULING ACTIVITIES AT THE SITE.

**EQUIPMENT DECONTAMINATION**

1. EQUIPMENT WILL BE CLEANED, AS REQUIRED, ON EQUIPMENT DECONTAMINATION PAD TO REMOVE SOIL PARTICLES IN ACCORDANCE WITH SPEC. SECTION 01560.
2. ONCE EXCAVATION IS COMPLETED AND ALL EQUIPMENT IS DECONTAMINATED, MOBILE DECONTAMINATION PADS WILL BE PROPERLY DEMOBILIZED AND MOVED TO ANOTHER PHASE 2 RA SITE FOR REUSE, OR DISPOSED AT AN APPROPRIATE OFFSITE FACILITY.

**HAZARDOUS WASTES:**

1. SAMPLES COLLECTED DURING RI AND PRELIMINARY CHARACTERIZATION SAMPLING INDICATED SOILS ABOVE THE TCLP STANDARD FOR LEAD. AREAS WHERE PRE-EXCAVATION SAMPLES RESULTS EXCEED TCLP LIMITS WILL BE STABILIZED IN-SITU PRIOR TO EXCAVATION. STABILIZED SOILS WILL BE EXCAVATED AND DISPOSED AT AN APPROVED OFF-SITE FACILITY.

**LEGEND**

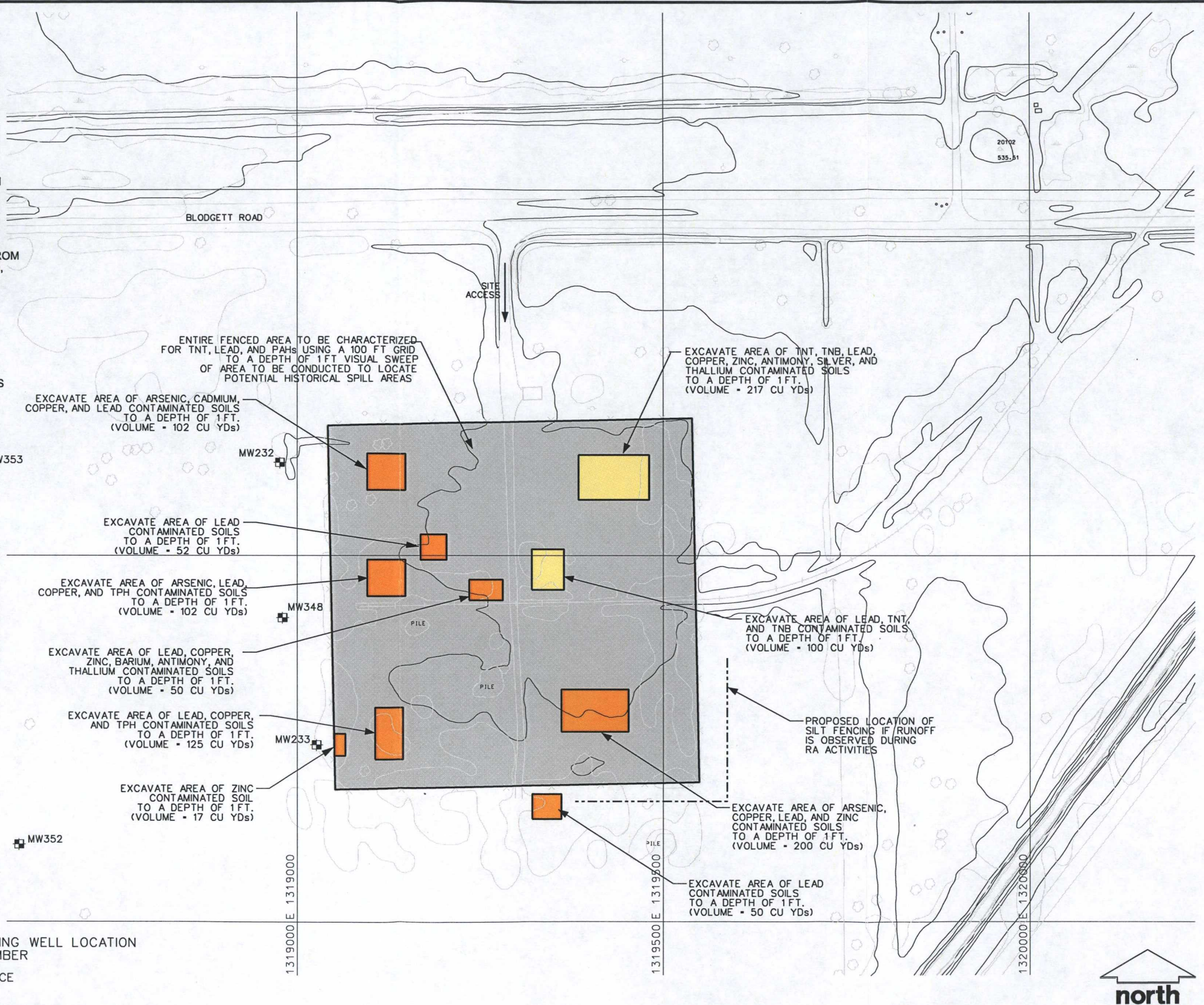
- \*—\*— FENCE LINE  
+ + + RAILROAD TRACKS

SRU2 SOILS

SRU3 SOILS

AREA TO BE SAMPLED FOR POTENTIALLY IMPACTED SOIL

- MW232 MONITORING WELL LOCATION AND NUMBER  
----- SILT FENCE



|              |          |
|--------------|----------|
| LHP          | DLF      |
| DEVELOPED BY | DRAWN BY |
| MGC          | 10/12/09 |
| APPROVED BY  | DATE     |
| REVISIONS    | DATE     |

|                               |
|-------------------------------|
| CONTRACT NO. DACW27-97-D-0015 |
| TASK ORDER NO. 4016           |
| VERIFY SCALE                  |
| 0 1/2 1                       |
| BAR REPRESENTS ONE INCH       |

|  |
|--|
| <b>SITE M3 - REMEDIAL DESIGN PLAN</b>                |
| CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12 |
| PHASE 2 REMEDIAL ACTION                              |
| JOLIET ARMY AMMUNITION PLANT                         |
| WILMINGTON, ILLINOIS                                 |

|                    |
|--------------------|
| <b>FIGURE 1-6a</b> |
| MWH                |



3322\020\cadd\figure 1-6b.dgn Model: Default DesignScript: MWH\_Vain\_Pentable\_VBS\_COLOR.tbl PlotScale: 400.0  
File: L:\J085\2  
User: dfreri  
Plot Date: 09/11/2009 11:39:47 AM

SITE PREPARATION:

1. INSTALLATION OF SILT FENCE WILL BE AT DISCRETION OF CONSTRUCTION SUPERINTENDENT BASED UPON SITE CONDITIONS PRIOR TO EXCAVATION AND RESULTS OF PRE-EXCAVATION SAMPLING. INSTALL SILT FENCE IN ACCORDANCE WITH MANUFACTURERS WRITTEN DIRECTIONS, SPEC. SECTION 02276, AND THE SILT FENCE INSTALLATION DETAIL.
2. INSTALLATION OF ROCKCHECK DAM WILL BE AT DISCRETION OF CONSTRUCTION SUPERINTENDENT BASED UPON SITE CONDITIONS PRIOR TO EXCAVATION AND RESULTS OF PRE-EXCAVATION SAMPLING. ROCK CHECK DAMS TO BE INSTALLED ACCORDING TO INSTALLATION DETAIL.
3. VISUAL OBSERVATION AND ENSYS TEST KIT ANALYSIS WILL BE CONDUCTED OVER DESIGNATED AREA TO DETERMINE LOCATION OF POTENTIAL EXPLOSIVES CONTAMINATION.
4. TEMPORARY ROAD WILL BE CONSTRUCTED TO LOCATIONS OF EXPLOSIVES CONTAMINATION BY GRADING ON-SITE MATERIAL, OR PLACING 2-INCH DIAMETER STONE AS REQUIRED.
5. LOCATION OF MOBILE EQUIPMENT DECONTAMINATION PAD WILL BE AT THE DISCRETION OF CONSTRUCTION SUPERINTENDENT PRIOR TO EXCAVATION ACTIVITIES.

SOIL EXCAVATION:

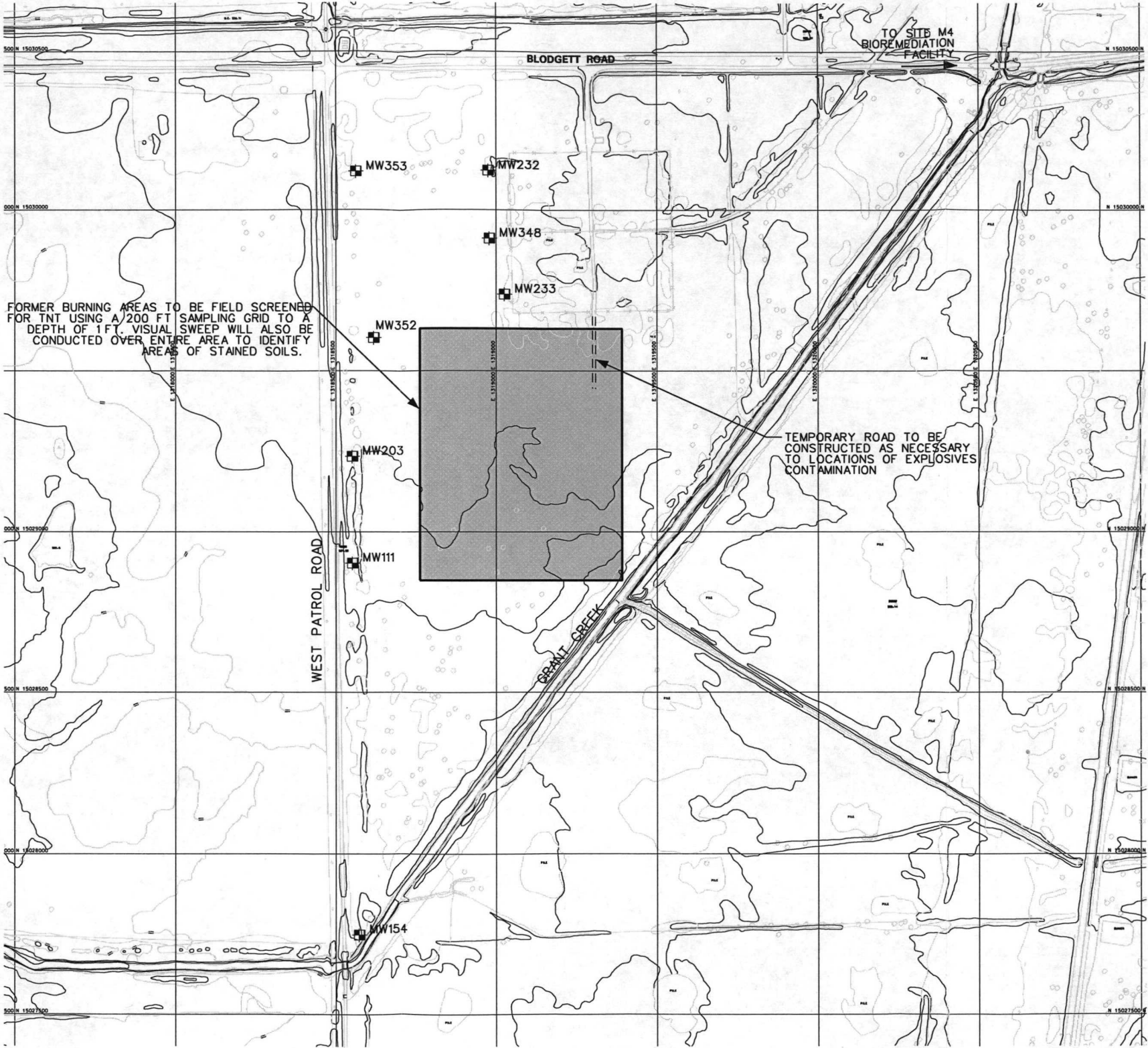
1. MWH WILL DELINEATE THE PROPOSED LIMITS OF EXCAVATION BASED UPON VISUAL OBSERVATION, AND TEST KIT RESULTS.
2. EXCAVATE SOIL WITHIN LIMITS OF EXCAVATION TO THE DEPTH REQUIRED BASED UPON TEST KIT RESULTS. PLACE EXCAVATED SOIL INTO TRUCKS FOR TREATMENT AT THE BIOREMEDIATION TREATMENT FACILITY.
3. FOLLOWING COMPLETION OF EXCAVATION ACTIVITIES, CONFIRMATION SAMPLES WILL BE OBTAINED AS DESCRIBED IN THE PHASE 2 - SAMPLING AND ANALYSIS PLAN.
4. IF ADDITIONAL EXCAVATION IS REQUIRED, EXCAVATE IN 6 IN INCREMENTS UNTIL SAMPLING INDICATES THAT REQUIRED LRG AND URG CRITERIA HAVE BEEN ACHIEVED.

BACKFILLING AND RESTORATION:



1. UPON VERIFICATION THAT LRG AND URG CRITERIA HAVE BEEN ACHIEVED, GRADE EXCAVATION WITH SURROUNDING MATERIAL TO PROMOTE PROPER DRAINAGE.
2. ONCE GRASS IS ESTABLISHED TO A HEIGHT OF 4 INCHES, REMOVE SILT FENCE (IF INSTALLED AT SITE).
3. BACKFILLING WILL BE CONDUCTED IN ACCORDANCE WITH SPEC. SECTION 02220.
4. TEMPORARY ROADS CONSTRUCTED FOR RA ACTIVATES WILL BE REMOVED, AS REQUIRED, FOLLOWING THE COMPLETION OF CONSTRUCTION/HAULING ACTIVITIES AT THE SITE.

EQUIPMENT DECONTAMINATION:

1. EQUIPMENT WILL BE CLEANED, AS REQUIRED, ON EQUIPMENT DECONTAMINATION PAD TO REMOVE SOIL PARTICLES IN ACCORDANCE WITH SPEC. SECTION 01560.
2. ONCE EXCAVATION IS COMPLETED AND ALL EQUIPMENT IS DECONTAMINATED, MOBILE DECONTAMINATION PADS WILL BE PROPERLY DEMOBILIZED AND MOVED TO ANOTHER PHASE 2 RA SITE FOR REUSE, OR DISPOSED AT AN APPROPRIATE OFFSITE FACILITY.



LEGEND


-  AREA TO BE SAMPLED FOR POTENTIALLY IMPACTED SOIL
-  MW111 MONITORING WELL LOCATION AND NUMBER



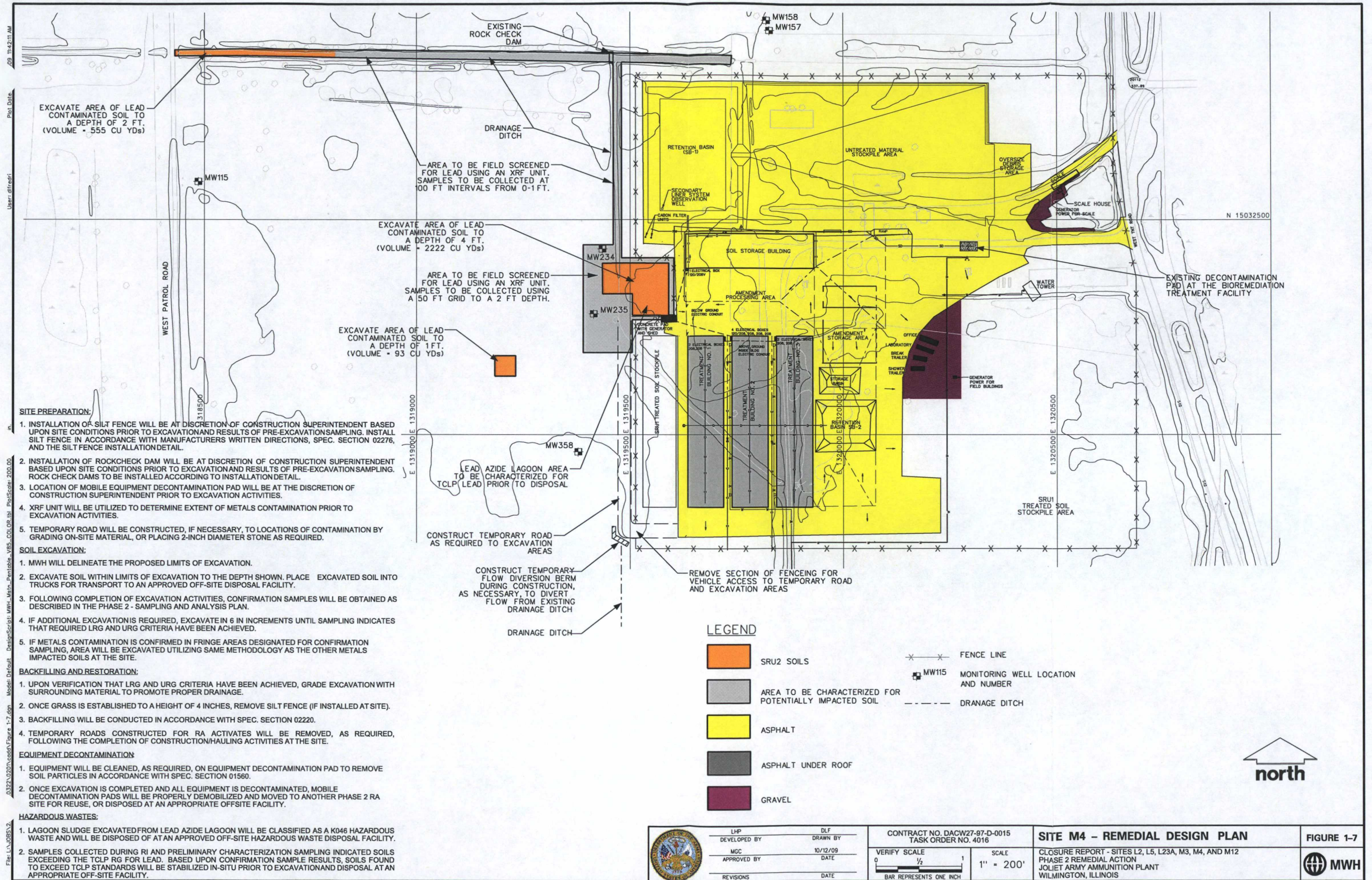
|              |          |
|--------------|----------|
| LHP          | DLF      |
| DEVELOPED BY | DRAWN BY |
| MCC          | 10/12/09 |
| APPROVED BY  | DATE     |
| REVISIONS    | DATE     |

|                               |
|-------------------------------|
| CONTRACT NO. DACW27-97-D-0015 |
| TASK ORDER NO. 4016           |
| VERIFY SCALE                  |
| 0 1/2 1                       |
| BAR REPRESENTS ONE INCH       |

|  |
|--|
| SITE M3 - REMEDIAL DESIGN PLAN                       |
| CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12 |
| PHASE 2 REMEDIAL ACTION                              |
| JOLIET ARMY AMMUNITION PLANT                         |
| WILMINGTON, ILLINOIS                                 |

|   |
|---|
| FIGURE 1-6b   |
|  |







2009 11:53:44 AM Plot Date User: dlfrd1 7 in. 10322\0201\coord\Figure 1-8a.dgn Model: Default DesignScript: MWH\_Main\_Pentable\_V85 COLOR.tbl PlotScale: 300 File: L:\J085\

**SITE PREPARATION:**

1. INSTALLATION OF SILT FENCE WILL BE AT DISCRETION OF CONSTRUCTION SUPERINTENDENT BASED UPON SITE CONDITIONS PRIOR TO EXCAVATION AND RESULTS OF PRE-EXCAVATION SAMPLING. INSTALL SILT FENCE IN ACCORDANCE WITH MANUFACTURERS WRITTEN DIRECTIONS, SPEC. SECTION 02276, AND THE SILT FENCE INSTALLATION DETAIL.
2. INSTALLATION OF ROCKCHECK DAM WILL BE AT DISCRETION OF CONSTRUCTION SUPERINTENDENT BASED UPON SITE CONDITIONS PRIOR TO EXCAVATION AND RESULTS OF PRE-EXCAVATION SAMPLING. ROCK CHECK DAMS TO BE INSTALLED ACCORDING TO INSTALLATION DETAIL.
3. LOCATION OF MOBILE EQUIPMENT DECONTAMINATION PAD WILL BE AT THE DISCRETION OF CONSTRUCTION SUPERINTENDENT PRIOR TO EXCAVATION ACTIVITIES.
4. TEMPORARY ROAD WILL BE CONSTRUCTED, IF NECESSARY, TO LOCATIONS OF CONTAMINATION BY GRADING ON-SITE MATERIAL, OR PLACING 2-INCH DIAMETER STONE AS REQUIRED.
5. VISUAL OBSERVATION AND XRF UNIT ANALYSIS WILL BE CONDUCTED OVER DESIGNATED EXCAVATION AREAS TO DETERMINE LOCATION OF POTENTIAL METALS CONTAMINATION.
6. VISUAL INSPECTION WILL BE CONDUCTED AT THE SITE TO IDENTIFY SURFICIAL RAW SULFUR PRESENT. ANY IDENTIFIED SULFUR WILL BE HANDPICKED OR EXCAVATED AND PROPERLY DISPOSED AT AN APPROPRIATE OFFSITE FACILITY.

**SOIL EXCAVATION:**

1. MWH WILL DELINEATE THE PROPOSED LIMITS OF EXCAVATION.
2. EXCAVATE SOIL WITHIN LIMITS OF EXCAVATION TO THE DEPTH SHOWN. PLACE EXCAVATED SOIL INTO TRUCKS FOR TRANSPORT TO AN APPROVED OFF-SITE DISPOSAL FACILITY.
3. FOLLOWING COMPLETION OF EXCAVATION ACTIVITIES, CONFIRMATION SAMPLES WILL BE OBTAINED AS DESCRIBED IN THE PHASE 2 - SAMPLING AND ANALYSIS PLAN.
4. IF ADDITIONAL EXCAVATION IS REQUIRED, EXCAVATE IN 6 IN INCREMENTS UNTIL SAMPLING INDICATES THAT REQUIRED LRG AND URG CRITERIA, AND TCLP STANDARDS HAVE BEEN ACHIEVED.
5. IF METALS CONTAMINATION IS CONFIRMED IN FRINGE AREAS DESIGNATED FOR CONFIRMATION SAMPLING, AREA WILL BE EXCAVATED UTILIZING SAME METHODOLOGY AS THE OTHER METALS IMPACTED SOILS AT THE SITE.

**BACKFILLING AND RESTORATION:**

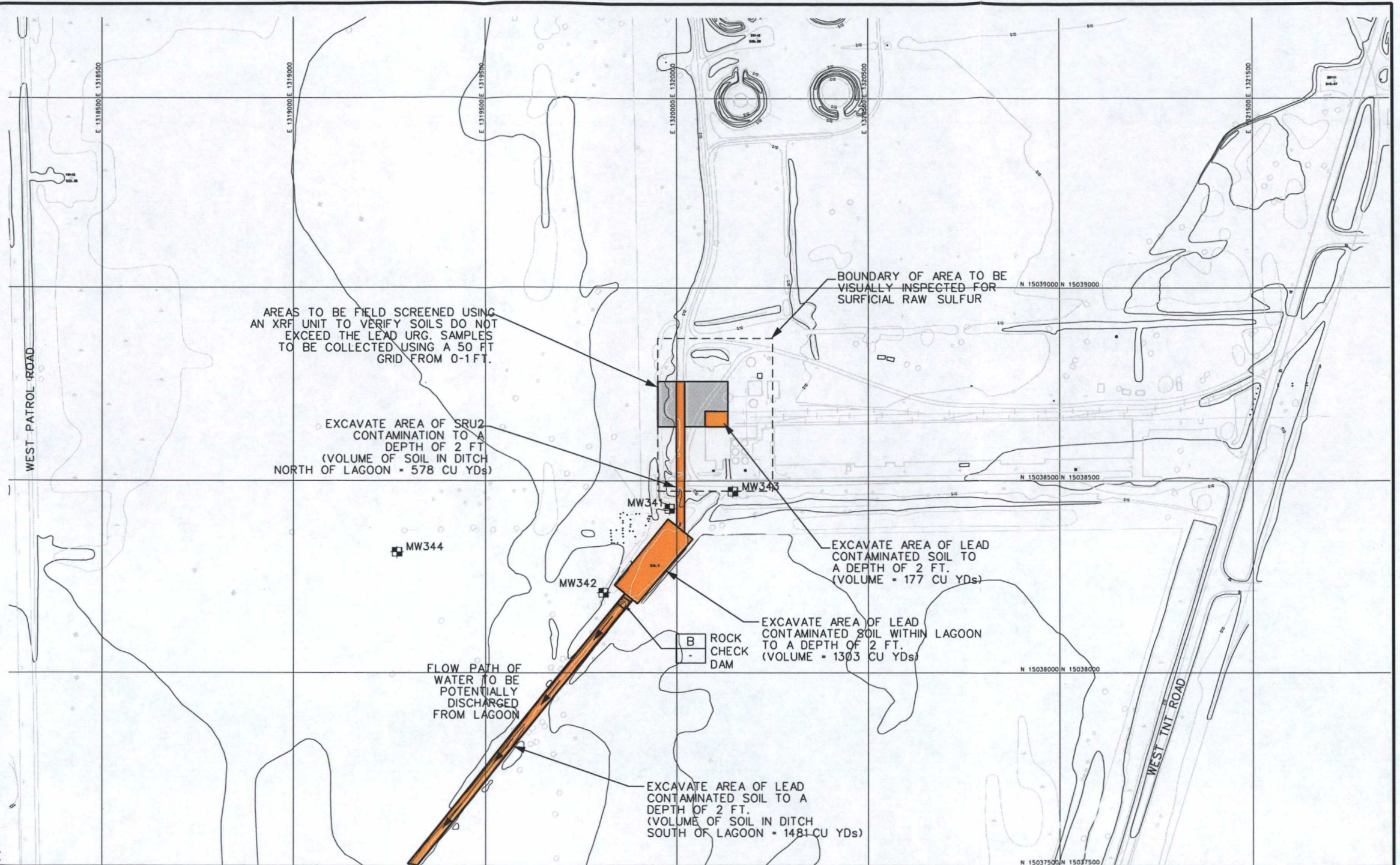
1. UPON VERIFICATION THAT LRG AND URG CRITERIA HAVE BEEN ACHIEVED, GRADE EXCAVATION WITH SURROUNDING MATERIAL TO PROMOTE PROPER DRAINAGE.
2. ONCE GRASS IS ESTABLISHED TO A HEIGHT OF 4 INCHES, REMOVE SILT FENCE (IF INSTALLED AT SITE).
3. BACKFILLING WILL BE CONDUCTED IN ACCORDANCE WITH SPEC. SECTION 02220.
4. TEMPORARY ROADS CONSTRUCTED FOR RA ACTIVATES WILL BE REMOVED, AS REQUIRED, FOLLOWING THE COMPLETION OF CONSTRUCTION/HAULING ACTIVITIES AT THE SITE.

**EQUIPMENT DECONTAMINATION**

1. EQUIPMENT WILL BE CLEANED, AS REQUIRED, ON EQUIPMENT DECONTAMINATION PAD TO REMOVE SOIL PARTICLES IN ACCORDANCE WITH SPEC. SECTION 01560.
2. ONCE EXCAVATION IS COMPLETED AND ALL EQUIPMENT IS DECONTAMINATED, MOBILE DECONTAMINATION PADS WILL BE PROPERLY DEMOBILIZED AND MOVED TO ANOTHER PHASE 2 RA SITE FOR REUSE, OR DISPOSED AT AN APPROPRIATE OFFSITE FACILITY.

**GENERAL NOTES:**

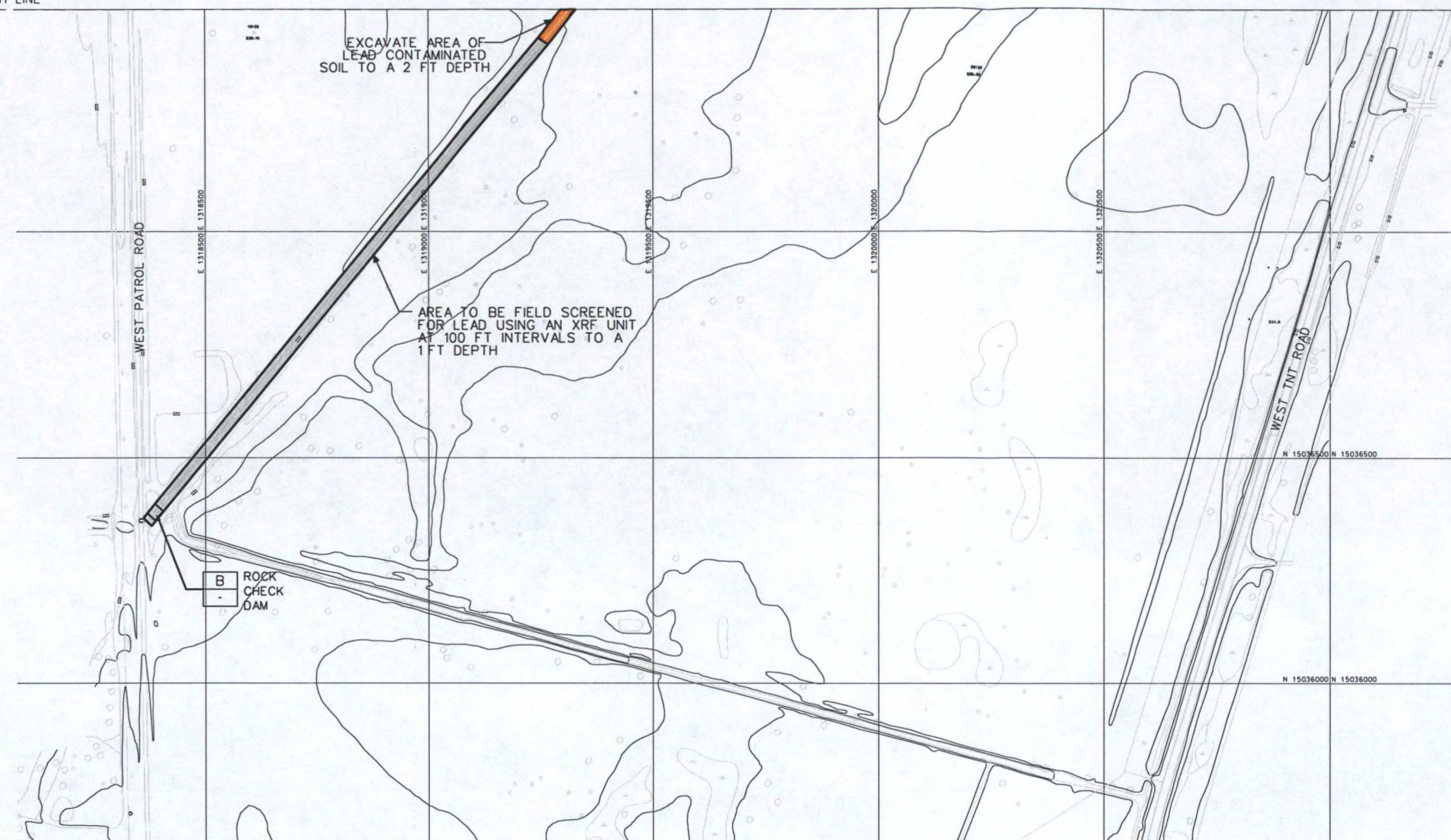
1. SEDIMENT SAMPLES COLLECTED FROM THE SELLITE LAGOON DURING FEASIBILITY STUDY SAMPLING EVENTS INDICATE THE PRESENCE OF TCLP LEAD IN LAGOON SEDIMENT.





009 11:55:16 AM  
Plot Date  
User: dffredri  
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\\0322\020\cadd\figure 1-8b.dgn Model: Default DesignScript: MWH-Main-Pentable\_V85\_COLOR.tbl PlotScale: 300.0  
File: L:\095\

MATCH LINE



**SITE PREPARATION:**

1. INSTALLATION OF SILT FENCE WILL BE AT DISCRETION OF CONSTRUCTION SUPERINTENDENT BASED UPON SITE CONDITIONS PRIOR TO EXCAVATION AND RESULTS OF PRE-EXCAVATION SAMPLING. INSTALL SILT FENCE IN ACCORDANCE WITH MANUFACTURERS WRITTEN DIRECTIONS, SPEC. SECTION 02276, AND THE SILT FENCE INSTALLATION DETAIL.
2. INSTALLATION OF ROCKCHECK DAM WILL BE AT DISCRETION OF CONSTRUCTION SUPERINTENDENT BASED UPON SITE CONDITIONS PRIOR TO EXCAVATION AND RESULTS OF PRE-EXCAVATION SAMPLING. ROCK CHECK DAMS TO BE INSTALLED ACCORDING TO INSTALLATION DETAIL.
3. LOCATION OF MOBILE EQUIPMENT DECONTAMINATION PAD WILL BE AT THE DISCRETION OF CONSTRUCTION SUPERINTENDENT PRIOR TO EXCAVATION ACTIVITIES.
4. TEMPORARY ROAD WILL BE CONSTRUCTED, IF NECESSARY, TO LOCATIONS OF CONTAMINATION BY GRADING ON-SITE MATERIAL, OR PLACING 2-INCH DIAMETER STONE AS REQUIRED.
5. VISUAL OBSERVATION AND XRF UNIT ANALYSIS WILL BE CONDUCTED OVER DESIGNATED EXCAVATION AREAS TO DETERMINE LOCATION OF POTENTIAL METALS CONTAMINATION.

**SOIL EXCAVATION:**

1. MWH WILL DELINEATE THE PROPOSED LIMITS OF EXCAVATION.
2. EXCAVATE SOIL WITHIN LIMITS OF EXCAVATION TO THE DEPTH SHOWN. PLACE EXCAVATED SOIL INTO TRUCKS FOR TRANSPORT TO AN APPROVED OFF-SITE DISPOSAL FACILITY.
3. FOLLOWING COMPLETION OF EXCAVATION ACTIVITIES, CONFIRMATION SAMPLES WILL BE OBTAINED AS DESCRIBED IN THE PHASE 2 - SAMPLING AND ANALYSIS PLAN.
4. IF ADDITIONAL EXCAVATION IS REQUIRED, EXCAVATE IN 6 IN INCREMENTS UNTIL SAMPLING INDICATES THAT REQUIRED LRG AND URG CRITERIA, AND TCLP STANDARDS HAVE BEEN ACHIEVED.
5. IF METALS CONTAMINATION IS CONFIRMED IN FRINGE AREAS DESIGNATED FOR CONFIRMATION SAMPLING, AREA WILL BE EXCAVATED UTILIZING SAME METHODOLOGY AS THE OTHER METALS IMPACTED SOILS AT THE SITE.



**BACKFILLING AND RESTORATION:**

1. UPON VERIFICATION THAT LRG AND URG CRITERIA HAVE BEEN ACHIEVED, GRADE EXCAVATION WITH SURROUNDING MATERIAL TO PROMOTE PROPER DRAINAGE.
2. ONCE GRASS IS ESTABLISHED TO A HEIGHT OF 4 INCHES, REMOVE SILT FENCE (IF INSTALLED AT SITE).
3. BACKFILLING WILL BE CONDUCTED IN ACCORDANCE WITH SPEC. SECTION 02220.
4. TEMPORARY ROADS CONSTRUCTED FOR RA ACTIVATES WILL BE REMOVED, AS REQUIRED, FOLLOWING THE COMPLETION OF CONSTRUCTION/HAULING ACTIVITIES AT THE SITE.



**EQUIPMENT DECONTAMINATION**

1. EQUIPMENT WILL BE CLEANED, AS REQUIRED, ON EQUIPMENT DECONTAMINATION PAD TO REMOVE SOIL PARTICLES IN ACCORDANCE WITH SPEC. SECTION 01560.
2. ONCE EXCAVATION IS COMPLETED AND ALL EQUIPMENT IS DECONTAMINATED, MOBILE DECONTAMINATION PADS WILL BE PROPERLY DEMOBILIZED AND MOVED TO ANOTHER PHASE 2 RA SITE FOR REUSE, OR DISPOSED AT AN APPROPRIATE OFFSITE FACILITY.

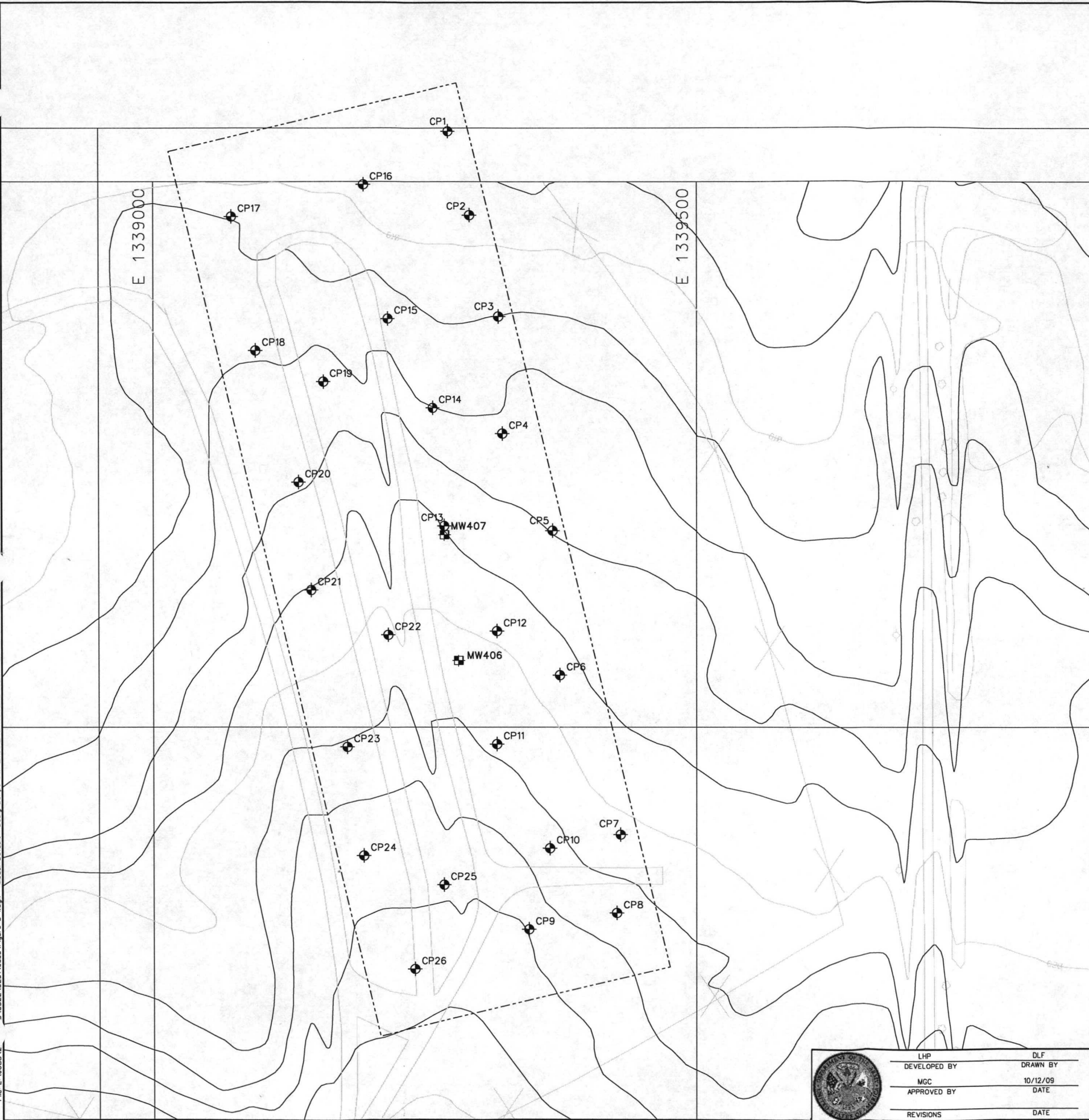
**LEGEND**

-  SRU2 SOILS
-  AREA TO BE CHARACTERIZED FOR POTENTIALLY IMPACTED SOIL



|   |                     |                  |   |   |  |
|---|---------------------|------------------|---|---|--|
|  | LHP<br>DEVELOPED BY | DLF<br>DRAWN BY  | CONTRACT NO. DACW27-97-D-0015<br>TASK ORDER NO. 4016  | SITE M12 - REMEDIAL DESIGN PLAN (SOUTH SECTION) FIGURE 1-8b |  |
|   | MCC<br>APPROVED BY  | 10/12/09<br>DATE |   |   | VERIFY SCALE<br>0 1/2 1<br>SCALE<br>1" = 300'<br>BAR REPRESENTS ONE INCH |
|   | REVISIONS           | DATE             |   |   |  |
|   |                     |                  | CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12<br>PHASE 2 REMEDIAL ACTION<br>JOLIET ARMY AMMUNITION PLANT<br>WILMINGTON, ILLINOIS |   |  |
|   |                     |                  |    |   |  |





LEGEND

- ✕—✕ FENCE LINE
- MW407 MONITORING WELL LOCATION AND NUMBER
- ◆ CP1 SAMPLE POINT LOCATION AND DESIGNATION
- CHARACTERIZATION BOUNDARY

GENERAL NOTES

1. REFER TO TABLE 3-2 FOR ANALYTICAL RESULTS FOR THE NOTED SAMPLE LOCATIONS.



|              |          |
|--------------|----------|
| LHP          | DLF      |
| DEVELOPED BY | DRAWN BY |
| MGC          | 10/12/09 |
| APPROVED BY  | DATE     |
| REVISIONS    | DATE     |

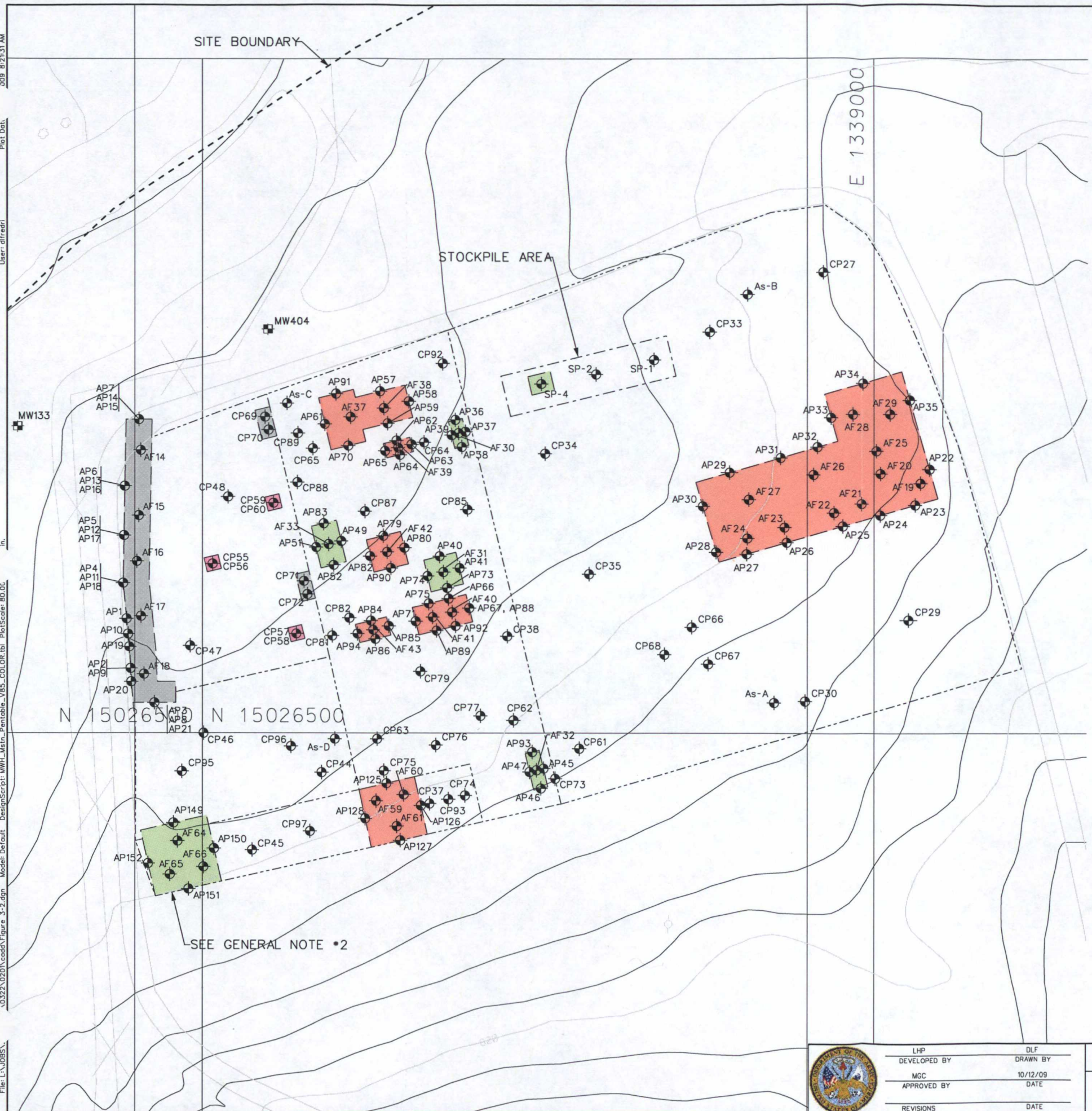
|  |
|--|
| CONTRACT NO. DACW27-97-D-0015<br>TASK ORDER NO. 4016 |
| VERIFY SCALE   |
| 0 1/2 1  |
| BAR REPRESENTS ONE INCH                              |

|   |
|---|
| RA EXCAVATION AND SAMPLING ACTIVITIES -<br>SITE L2 - NORTH-SOUTH BURNING PADS |
| CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12                          |
| PHASE 2 REMEDIAL ACTION   |
| JOLIET ARMY AMMUNITION PLANT  |
| WILMINGTON, ILLINOIS  |

|            |
|------------|
| FIGURE 3-1 |
| MWH        |



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Plot Dtl.  
User: dfrdri  
in.  
0322\0201\cadd\figure 3-2.dgn Model: Default DesignScript: MWH-Main\_Pentable\_V85\_COLOR.tbl PlotScale: 80.0  
File: L:\J085\



LEGEND

- X X FENCE LINE
- MW133 MONITORING WELL LOCATION AND NUMBER
- AF14 SAMPLE POINT LOCATION AND DESIGNATION
- DEPTH OF EXCAVATION TO 1.0 FOOT
- DEPTH OF EXCAVATION TO 2.0 FEET
- DEPTH OF EXCAVATION TO 4.0 FEET
- DEPTH OF EXCAVATION TO 8.0 FEET
- EXCAVATION BOUNDARY
- CHARACTERIZATION BOUNDARY
- STOCKPILE BOUNDARY

GENERAL NOTES

1. ONLY PASSING CHARACTERIZATION AND CONFIRMATION SAMPLES ARE SHOWN. ANY SAMPLE LOCATIONS WHERE FURTHER EXCAVATION WAS CONDUCTED DUE TO SAMPLE EXCEEDANCES ARE NOT INCLUDED.
2. APPROXIMATELY 125 CY OF SRU1 AND SRU2 SOILS WERE TO BE EXCAVATED FROM THE SOUTHERN PORTION OF THE EAST-WEST BURNING PADS. THE AREA WAS CHARACTERIZED FOR EXPLOSIVES AND LEAD PRIOR TO THE PROPOSED EXCAVATION TO 1 FOOT BGS. EXPLOSIVES WERE NOT DETECTED DURING THE INITIAL CHARACTERIZATION, HOWEVER, LEAD EXCEEDED LRG AND URG CRITERIA. THE WESTERN PORTION WAS EXCAVATED TO 2 FEET BGS AND CONFIRMATION SAMPLING FOR LEAD ONLY WAS CONDUCTED.
3. REFER TO TABLE 3-3 FOR ANALYTICAL RESULTS FOR THE NOTED SAMPLE LOCATIONS.



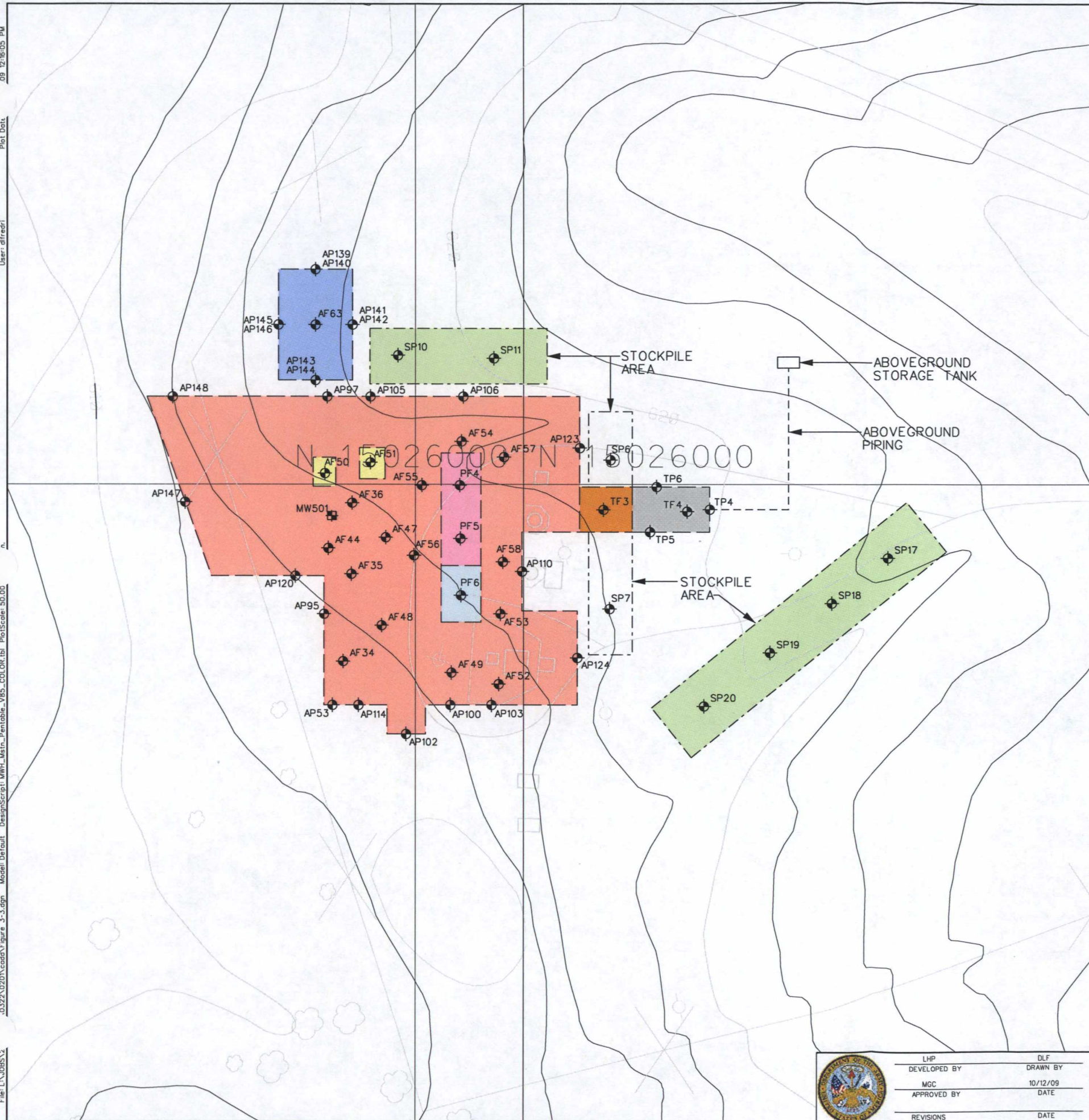
|  |                  |               |  |  |   |  |            |
|--|------------------|---------------|--|--|---|--|------------|
|  | LHP DEVELOPED BY | DLF DRAWN BY  | CONTRACT NO. DACW27-97-D-0015<br>TASK ORDER NO. 4016 |  | RA EXCAVATION AND SAMPLING ACTIVITIES -<br>SITE L2 - EAST-WEST BURNING PADS |  | FIGURE 3-2 |
|  | MGC APPROVED BY  | 10/12/09 DATE | VERIFY SCALE<br>0 1/2 1<br>BAR REPRESENTS ONE INCH   |  | SCALE<br>1" = 80'   |  |            |
|  | REVISIONS        |               | DATE   |  |   |  |            |
|  |                  |               |  |  |   |  |            |

CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12  
PHASE 2 REMEDIAL ACTION  
JOLIET ARMY AMMUNITION PLANT  
WILMINGTON, ILLINOIS

MWH



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Plot Date:  
User: dlfreddi  
A  
0322\020\ecod\Figure 3-3.dgn Model: Default DesignScript: MWH\_Main\_Pentable\_VBS\_COLOR.tbl PlotScale: 50.00  
File: L:\00BS\2



### LEGEND

- FENCE LINE
- MW501 MONITORING WELL LOCATION AND NUMBER
- AP53 SAMPLE POINT LOCATION AND DESIGNATION
- SP6 STOCKPILE SAMPLE POINT AND DESIGNATION
- PF4 POPPING FURNACE SAMPLE POINT AND DESIGNATION
- TF3 TRENCH FLOOR SAMPLE POINT AND DESIGNATION
- TP4 TRENCH PERIMETER SAMPLE POINT AND DESIGNATION
- DEPTH OF EXCAVATION TO 1 FOOT
- DEPTH OF EXCAVATION TO 2 FEET
- DEPTH OF EXCAVATION TO 3 FEET
- DEPTH OF EXCAVATION TO 4 FEET
- DEPTH OF EXCAVATION TO 5 FEET
- DEPTH OF EXCAVATION TO 6 FEET
- DEPTH OF EXCAVATION TO 7 FEET
- DEPTH OF EXCAVATION TO 12 FEET
- EXCAVATION BOUNDARY
- STOCKPILE AREA

### GENERAL NOTES

1. ONLY PASSING CONFIRMATION SAMPLES ARE SHOWN. ANY SAMPLE LOCATIONS WHERE FURTHER EXCAVATION WAS CONDUCTED DUE TO SAMPLE EXCEEDANCES ARE NOT INCLUDED.
2. REFER TO TABLE 3-4 FOR ANALYTICAL RESULTS FOR THE NOTED SAMPLE LOCATIONS.



|              |          |
|--------------|----------|
| LHP          | DLF      |
| DEVELOPED BY | DRAWN BY |
| MGC          | 10/12/09 |
| APPROVED BY  | DATE     |
| REVISIONS    | DATE     |

|  |          |
|--|----------|
| CONTRACT NO. DACW27-97-D-0015<br>TASK ORDER NO. 4016 |          |
| VERIFY SCALE   | SCALE    |
| 0 1/2 1  | 1" = 50' |
| BAR REPRESENTS ONE INCH                              |          |

**RA EXCAVATION AND SAMPLING ACTIVITIES -  
SITE L2 - FORMER POPPING FURNACES AREA**  
CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12  
PHASE 2 REMEDIAL ACTION  
JOLIET ARMY AMMUNITION PLANT  
WILMINGTON, ILLINOIS


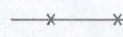

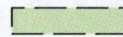

FIGURE 3-3







### LEGEND

-  GATE
-  FENCE LINE
-  SAMPLE POINT LOCATION AND DESIGNATION
-  DEPTH OF EXCAVATION TO 1.0 FOOT
-  EXCAVATION BOUNDARY

### GENERAL NOTES


- ONLY PASSING CONFIRMATION SAMPLES ARE SHOWN. ANY SAMPLE LOCATIONS WHERE FURTHER EXCAVATION WAS CONDUCTED DUE TO SAMPLE EXCEEDANCES ARE NOT INCLUDED.
- REFER TO TABLE 3-5 FOR ANALYTICAL RESULTS FOR THE NOTED SAMPLE LOCATIONS.



|              |          |
|--------------|----------|
| LHP          | DLF      |
| DEVELOPED BY | DRAWN BY |
| MGC          | 10/12/09 |
| APPROVED BY  | DATE     |
| REVISIONS    | DATE     |

|  |                   |
|--|-------------------|
| CONTRACT NO. DACW27-97-D-0015<br>TASK ORDER NO. 4016 |                   |
| VERIFY SCALE<br>0 1/2 1                              | SCALE<br>1" = 20' |
| BAR REPRESENTS ONE INCH                              |                   |

|   |
|---|
| <b>RA EXCAVATION AND SAMPLING ACTIVITIES -<br/>SITE L5 - BUILDING 26-2</b>  |
| CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12<br>PHASE 2 REMEDIAL ACTION<br>JOLIET ARMY AMMUNITION PLANT<br>WILMINGTON, ILLINOIS |





|   |
|---|
| <b>FIGURE 3-4</b>   |
|  |



Plot Date: 10/12/2009 12:20:52 PM  
User: dlfreri  
Model: Default  
DesignScript: MWH\_Meth\_Pentable\_v85\_Col\_08.tbl  
PlotScale: 30.0000 FT / in.  
File: L:\J085\209\_0900\0322\_020\cadd\Figure\_3-5.dgn



**LEGEND**

-  RAILROAD TRACKS
-  SAMPLE POINT LOCATION AND DESIGNATION
-  DEPTH OF EXCAVATION TO 1.0 FOOT
-  EXCAVATION BOUNDARY

**GENERAL NOTES**

1. ONLY PASSING CONFIRMATION SAMPLES ARE SHOWN. ANY SAMPLE LOCATIONS WHERE FURTHER EXCAVATION WAS CONDUCTED DUE TO SAMPLE EXCEEDANCES ARE NOT INCLUDED.
2. REFER TO TABLE 3-6 FOR ANALYTICAL RESULTS FOR THE NOTED SAMPLE LOCATIONS.



|              |          |
|--------------|----------|
| LHP          | DLF      |
| DEVELOPED BY | DRAWN BY |
| MGC          | 10/12/09 |
| APPROVED BY  | DATE     |
| REVISIONS    | DATE     |

|  |                   |
|--|-------------------|
| CONTRACT NO. DACW27-97-D-0015<br>TASK ORDER NO. 4016 |                   |
| VERIFY SCALE<br>0 1/2 1                              | SCALE<br>1" = 30' |
| BAR REPRESENTS ONE INCH                              |                   |

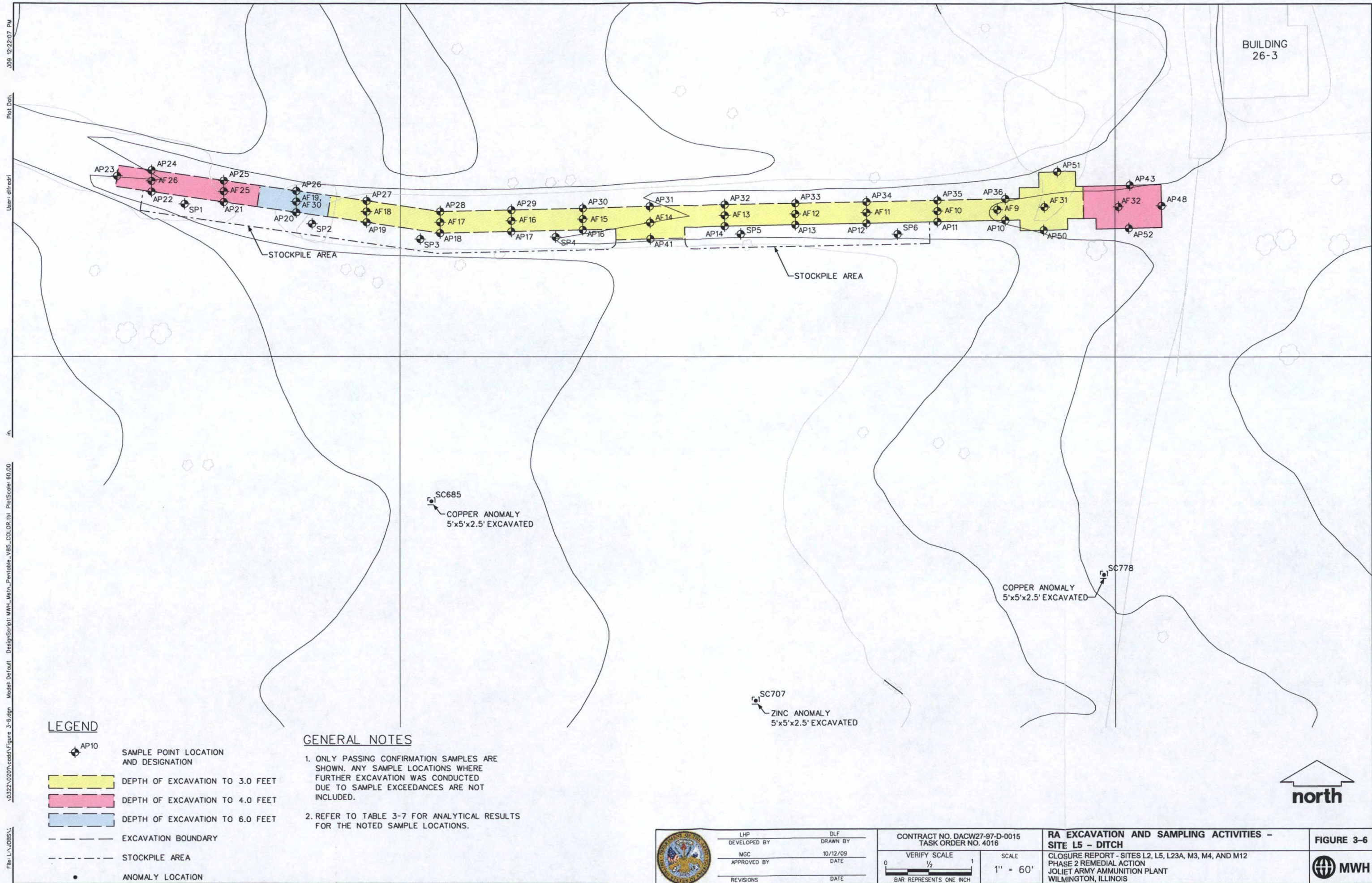
|   |
|---|
| RA EXCAVATION AND SAMPLING ACTIVITIES -<br>SITE L5 - BUILDINGS 26-3 AND 26-4<br>CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12<br>PHASE 2 REMEDIAL ACTION<br>JOLIET ARMY AMMUNITION PLANT<br>WILMINGTON, ILLINOIS |
|---|

**FIGURE 3-5**



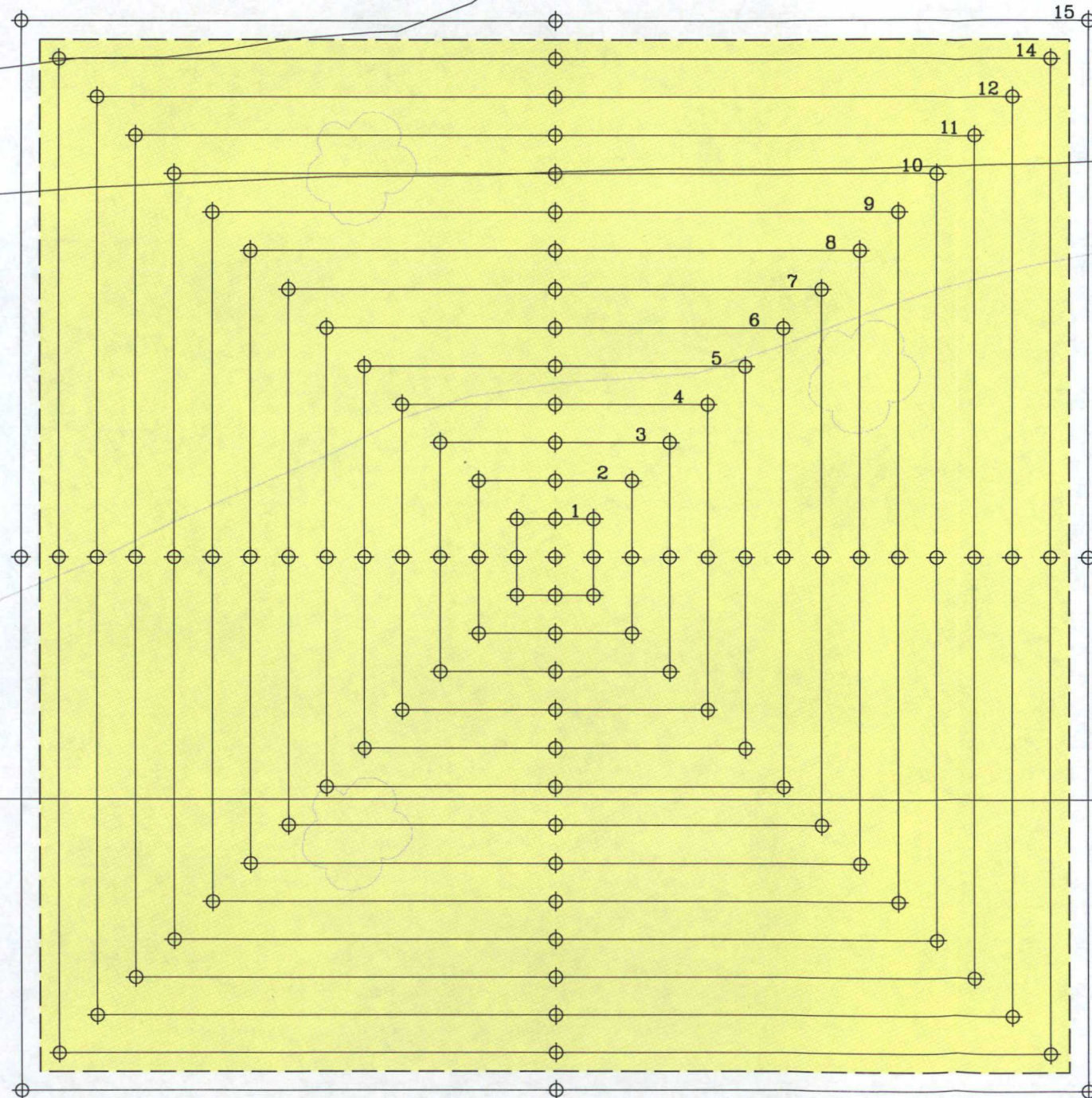
**MWH**







UNNAMED BUILDING



# LEGEND

- COMPOSITING AREA SAMPLE
- DEPTH OF EXCAVATION TO 3.0 FEET
- EXCAVATION BOUNDARY

## GENERAL NOTES

1. ALL HORIZONTAL AND VERTICAL INCREMENTS BETWEEN COMPOSITING AREAS ARE 5 FEET IN LENGTH.
2. ONLY PASSING COMPOSITE SAMPLES ARE SHOWN. ANY SAMPLE LOCATIONS WHERE FURTHER EXCAVATION WAS CONDUCTED DUE TO SAMPLE EXCEEDANCE ARE NOT INCLUDED.
3. REFER TO TABLE 3-8 FOR ANALYTICAL RESULTS FOR THE NOTED SAMPLE LOCATIONS.



|              |          |
|--------------|----------|
| LHP          | DLF      |
| DEVELOPED BY | DRAWN BY |
| MGC          | 10/12/09 |
| APPROVED BY  | DATE     |
| REVISIONS    | DATE     |

CONTRACT NO. DACW27-97-D-0015  
TASK ORDER NO. 4016

VERIFY SCALE  
0 1/2 1  
BAR REPRESENTS ONE INCH

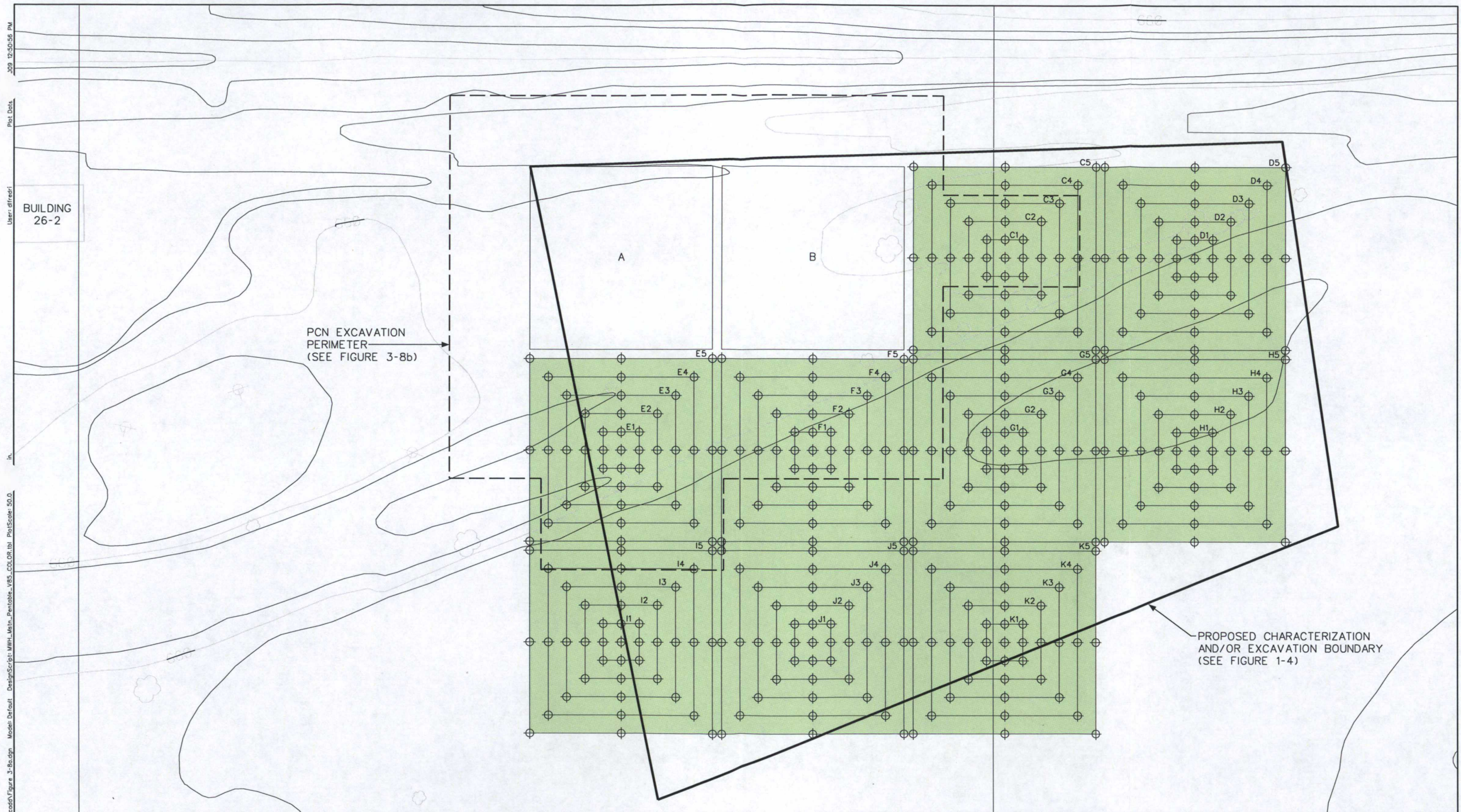
SCALE  
1" = 20'

**RA EXCAVATION AND SAMPLING ACTIVITIES -  
SITE L5 - PCB EXCAVATION SAMPLING GRID**  
CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12  
PHASE 2 REMEDIAL ACTION  
JOLIET ARMY AMMUNITION PLANT  
WILMINGTON, ILLINOIS

FIGURE 3-7







**LEGEND**

- COMPOSITING AREA SAMPLE
- DEPTH OF EXCAVATION TO 1.0 FOOT
- EXCAVATION BOUNDARY

**GENERAL NOTES**

1. ALL HORIZONTAL AND VERTICAL INCREMENTS BETWEEN COMPOSITING AREAS ARE 10 FEET IN LENGTH.
2. ONLY PASSING COMPOSITE SAMPLES ARE SHOWN. ANY SAMPLE LOCATIONS WHERE FURTHER EXCAVATION WAS CONDUCTED DUE TO SAMPLE EXCEEDANCE ARE NOT INCLUDED.
3. LEAD WAS DETECTED ABOVE THE LRG/URG CRITERIA IN COMPOSITE SAMPLES C1, C2, AND C3. THE EXCAVATION OF LEAD-IMPACTED SOILS AND FINAL CONFIRMATION SAMPLES ARE SHOWN ON FIGURE 3-8b.
4. REFER TO TABLE 3-9 FOR ANALYTICAL RESULTS FOR THE NOTED SAMPLE LOCATIONS.



|              |          |
|--------------|----------|
| LHP          | DLF      |
| DEVELOPED BY | DRAWN BY |
| MGC          | 10/12/09 |
| APPROVED BY  | DATE     |
| REVISIONS    | DATE     |

|                               |
|-------------------------------|
| CONTRACT NO. DACW27-97-D-0015 |
| TASK ORDER NO. 4016           |
| VERIFY SCALE                  |
| 0 1/2 1                       |
| BAR REPRESENTS ONE INCH       |

SCALE  
1" = 50'

**RA EXCAVATION AND SAMPLING ACTIVITIES - SITE L5 - PCN EXCAVATION SAMPLING GRID**

CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12

PHASE 2 REMEDIAL ACTION

JOLIET ARMY AMMUNITION PLANT

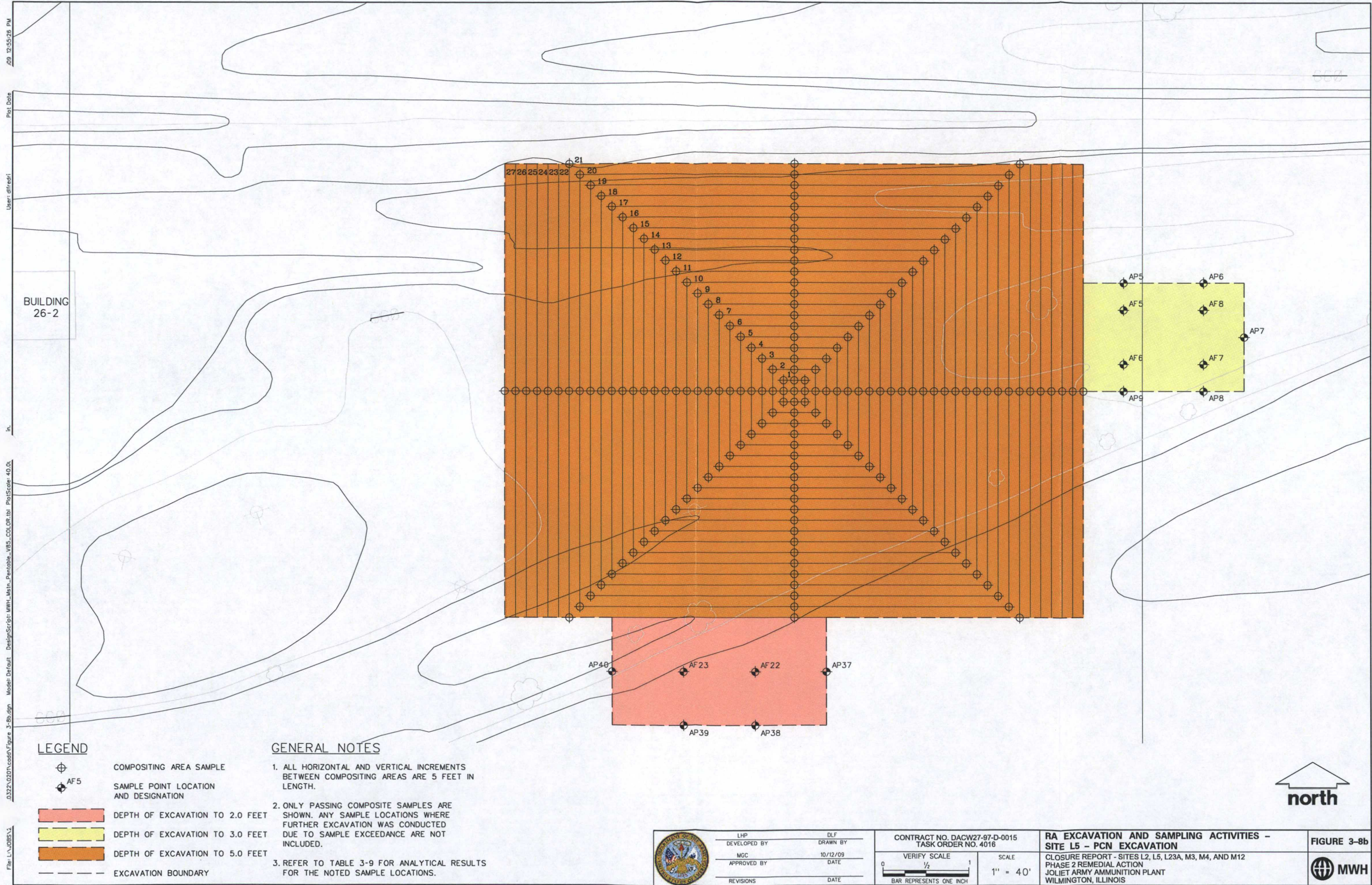
WILMINGTON, ILLINOIS

**FIGURE 3-8a**



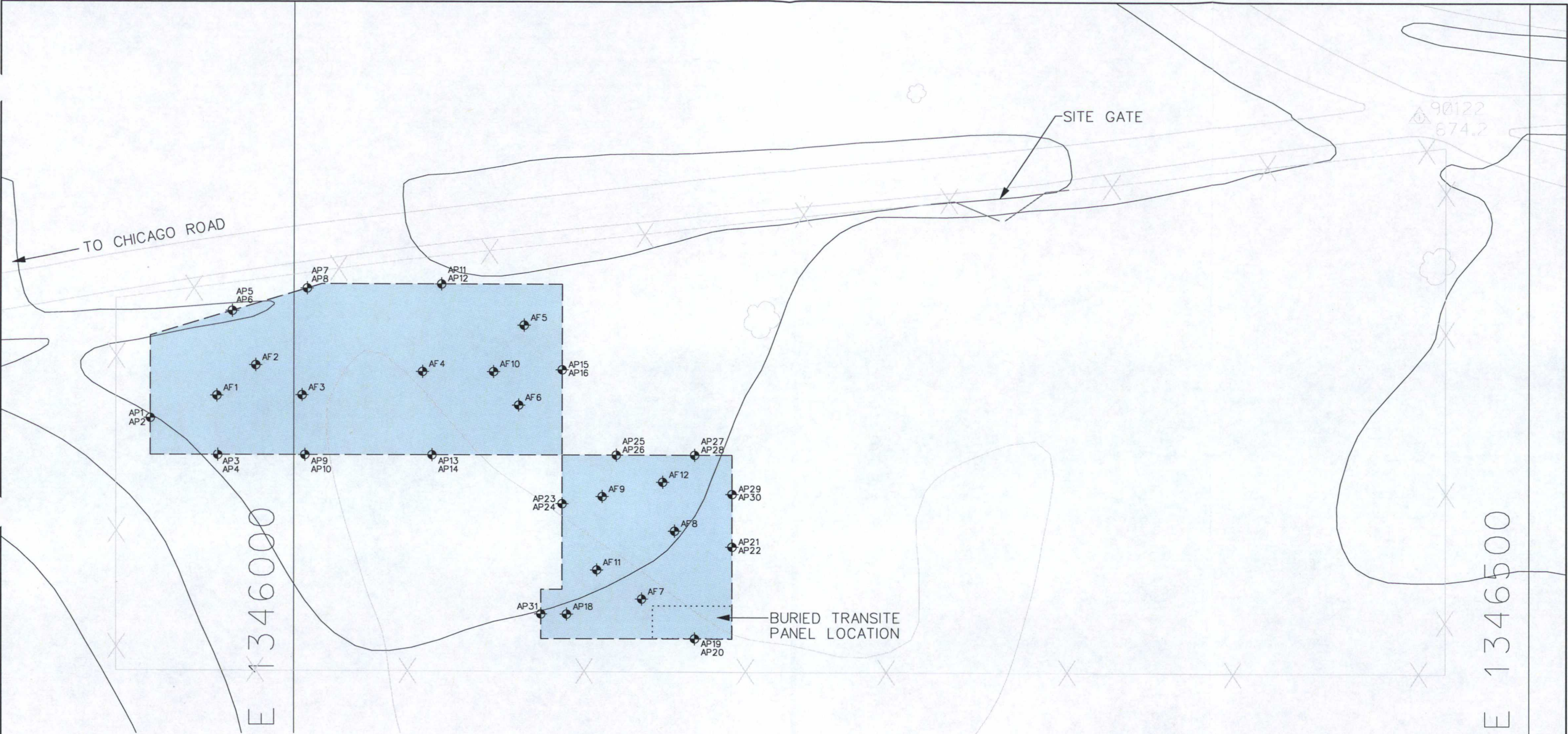
009 12:50:56 PM  
Plot Date  
User: dlfredr  
in  
-0322\020\cadd\Figure 3-8a.dgn Model Default DesignScript: MWH\_Main\_Pentable\_V85\_COLOR.tbl PlotScale: 50.0  
File: L:\085\3







09/12/18 PM Plot Date User: dfrdri 0322\0201\cadd\Figurs 3-9.dgn Model: Default DesignScript: MWH\_Main\_Pentable\_V85\_COLOR.tbl PlotScale: 40.000 File: L:\JOBS\2-



**LEGEND**

- X-X- FENCE LINE
- GATE
- AF1 SAMPLE POINT LOCATION AND DESIGNATION
- DEPTH OF EXCAVATION TO 6.0 FEET
- EXCAVATION BOUNDARY
- BURIED TRANSITE PANEL LOCATION

**GENERAL NOTES**

1. ONLY PASSING CHARACTERIZATION AND CONFIRMATION SAMPLES ARE SHOWN. ANY SAMPLE LOCATIONS WHERE FURTHER EXCAVATION WAS CONDUCTED DUE TO SAMPLE EXCEEDANCES ARE NOT INCLUDED.
2. SAMPLE AP18 WAS COLLECTED AT THE PERIMETER WALL DURING AN INITIAL EXCAVATION. DUE TO A ZINC EXCEEDANCE AT A 1 FOOT DEPTH, THE ENTIRE AREA WAS RE-EXCAVATED TO A 6 FOOT DEPTH. SAMPLE AP31 WAS SAMPLED AND PASSED THE ZINC URG.
3. BURIED TRANSITE PANELS WERE REMOVED FROM THE EXCAVATION AREA BETWEEN 1 AND 6 FEET BELOW GROUND SURFACE.
4. REFER TO TABLE 3-10 FOR ANALYTICAL RESULTS FOR THE NOTED SAMPLE LOCATIONS.



|              |          |
|--------------|----------|
| LHP          | DLF      |
| DEVELOPED BY | DRAWN BY |
| MGC          | 10/12/09 |
| APPROVED BY  | DATE     |
| REVISIONS    | DATE     |



|                               |
|-------------------------------|
| CONTRACT NO. DACW27-97-D-0015 |
| TASK ORDER NO. 4016           |
| VERIFY SCALE                  |
| 0 1/2 1                       |
| BAR REPRESENTS ONE INCH       |

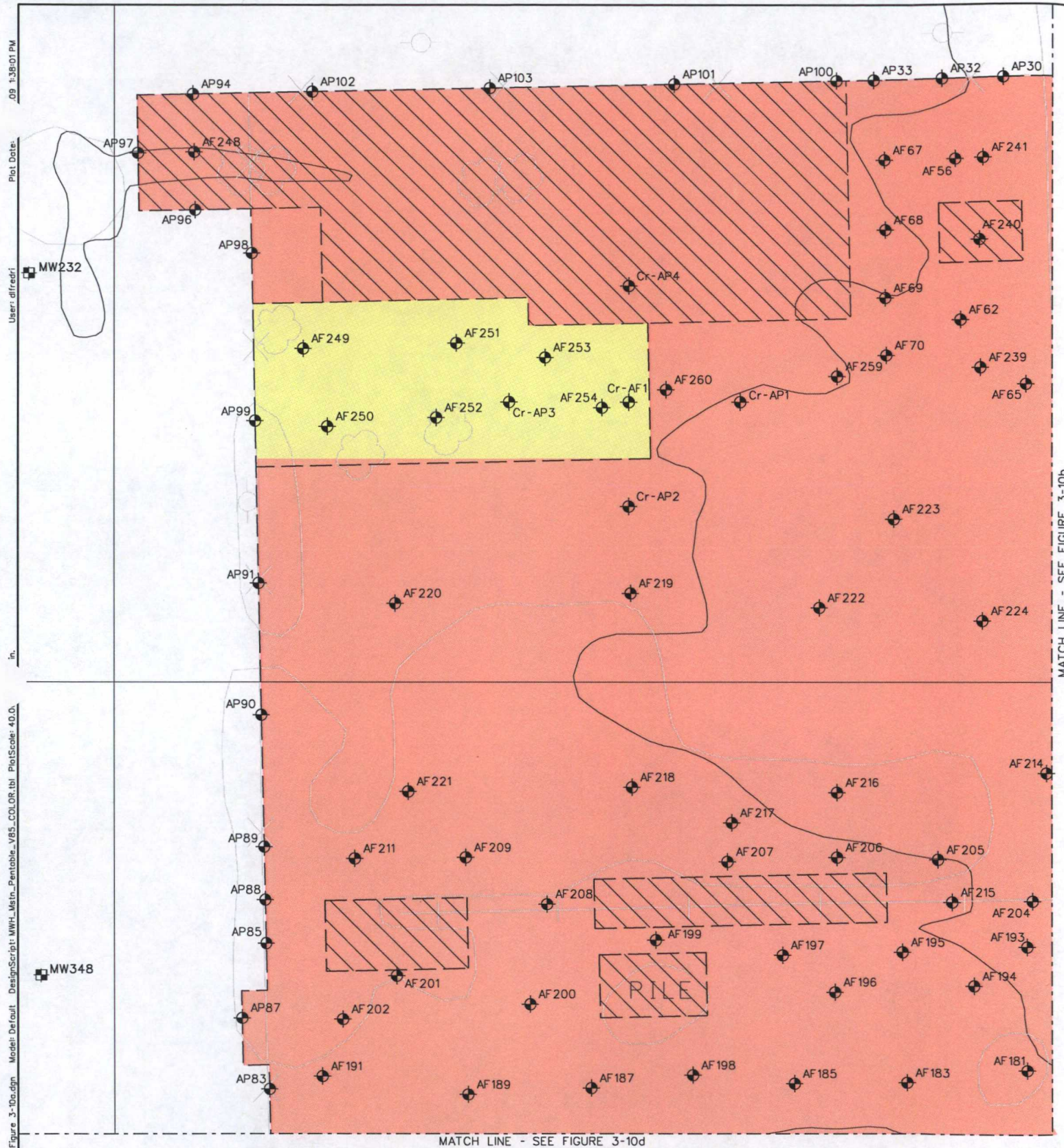
SCALE  
1" = 40'

|  |            |
|--|------------|
| RA EXCAVATION AND SAMPLING ACTIVITIES - SITE L23A    | FIGURE 3-9 |
| CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12 |            |
| PHASE 2 REMEDIAL ACTION                              |            |
| JOLIET ARMY AMMUNITION PLANT                         |            |
| WILMINGTON, ILLINOIS                                 |            |





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Plot Date:  
User: dfridi  
in.  
3322\0201\cadd\Figure 3-10a.dgn Model: Default DesignScript: MWH\_Matn\_Pentable\_V85\_COLOR.tbl PlotScale: 40.0  
File: L:\JOBS\2



#### LEGEND

- MW232 MONITORING WELL LOCATION AND NUMBER
- AF56 SAMPLE POINT LOCATION AND DESIGNATION
- SOILS EXCAVATED TO BEDROCK
- DEPTH OF EXCAVATION TO 2.0 FEET
- DEPTH OF EXCAVATION TO 3.0 FEET
- EXCAVATION BOUNDARY
- FENCE LINE

#### GENERAL NOTES

1. ONLY PASSING CHARACTERIZATION AND CONFIRMATION SAMPLES ARE SHOWN. ANY SAMPLE LOCATIONS WHERE FURTHER EXCAVATION WAS CONDUCTED DUE TO SAMPLE EXCEEDANCES ARE NOT INCLUDED.
2. REFER TO TABLE 3-11 FOR ANALYTICAL RESULTS FOR THE NOTED SAMPLE LOCATIONS.



|              |          |
|--------------|----------|
| LHP          | DLF      |
| DEVELOPED BY | DRAWN BY |
| MGC          | 10/12/09 |
| APPROVED BY  | DATE     |
| REVISIONS    | DATE     |

|  |  |                   |
|--|--|-------------------|
| CONTRACT NO. DACW27-97-D-0015<br>TASK ORDER NO. 4016 | VERIFY SCALE<br>0 1/2 1<br>BAR REPRESENTS ONE INCH | SCALE<br>1" = 40' |
|--|--|-------------------|

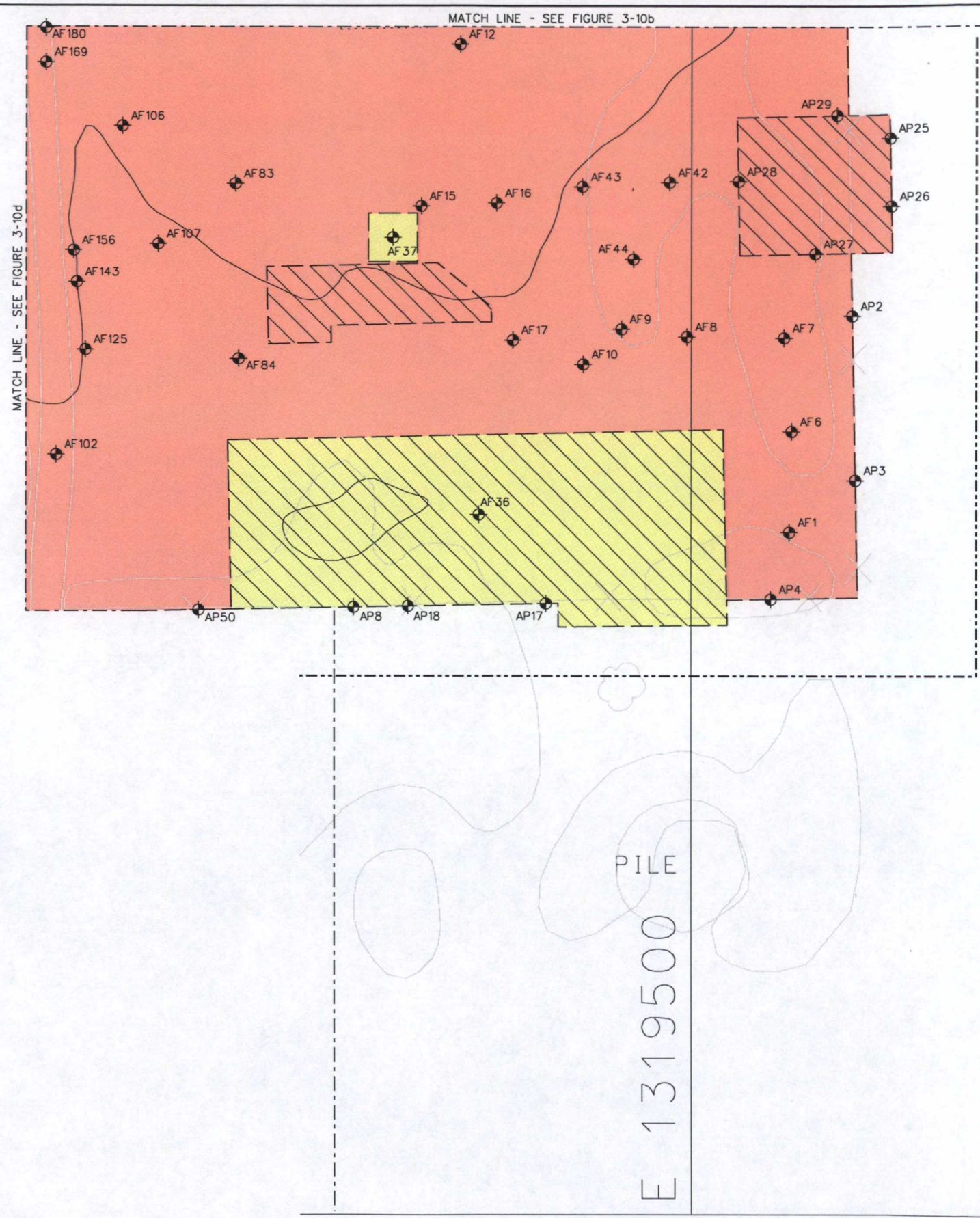
|   |
|---|
| RA EXCAVATION AND SAMPLING ACTIVITIES -<br>SITE M3 - FLASHING GROUNDS - NORTHWEST QUADRANT  |
| CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12<br>PHASE 2 REMEDIAL ACTION<br>JOLIET ARMY AMMUNITION PLANT<br>WILMINGTON, ILLINOIS |

|              |
|--------------|
| FIGURE 3-10a |
| MWH          |







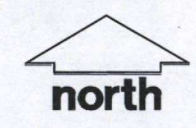


LEGEND

- AF1 SAMPLE POINT LOCATION AND DESIGNATION
- SOILS EXCAVATED TO BEDROCK
- DEPTH OF EXCAVATION TO 2.0 FEET
- DEPTH OF EXCAVATION TO 3.0 FEET
- EXCAVATION BOUNDARY
- SILT FENCE
- FENCE LINE

GENERAL NOTES

1. ONLY PASSING CHARACTERIZATION AND CONFIRMATION SAMPLES ARE SHOWN. ANY SAMPLE LOCATIONS WHERE FURTHER EXCAVATION WAS CONDUCTED DUE TO SAMPLE EXCEEDANCES ARE NOT INCLUDED.
2. REFER TO TABLE 3-11 FOR ANALYTICAL RESULTS FOR THE NOTED SAMPLE LOCATIONS.



|              |          |
|--------------|----------|
| LHP          | DLF      |
| DEVELOPED BY | DRAWN BY |
| MGC          | 10/12/09 |
| APPROVED BY  | DATE     |
| REVISIONS    | DATE     |

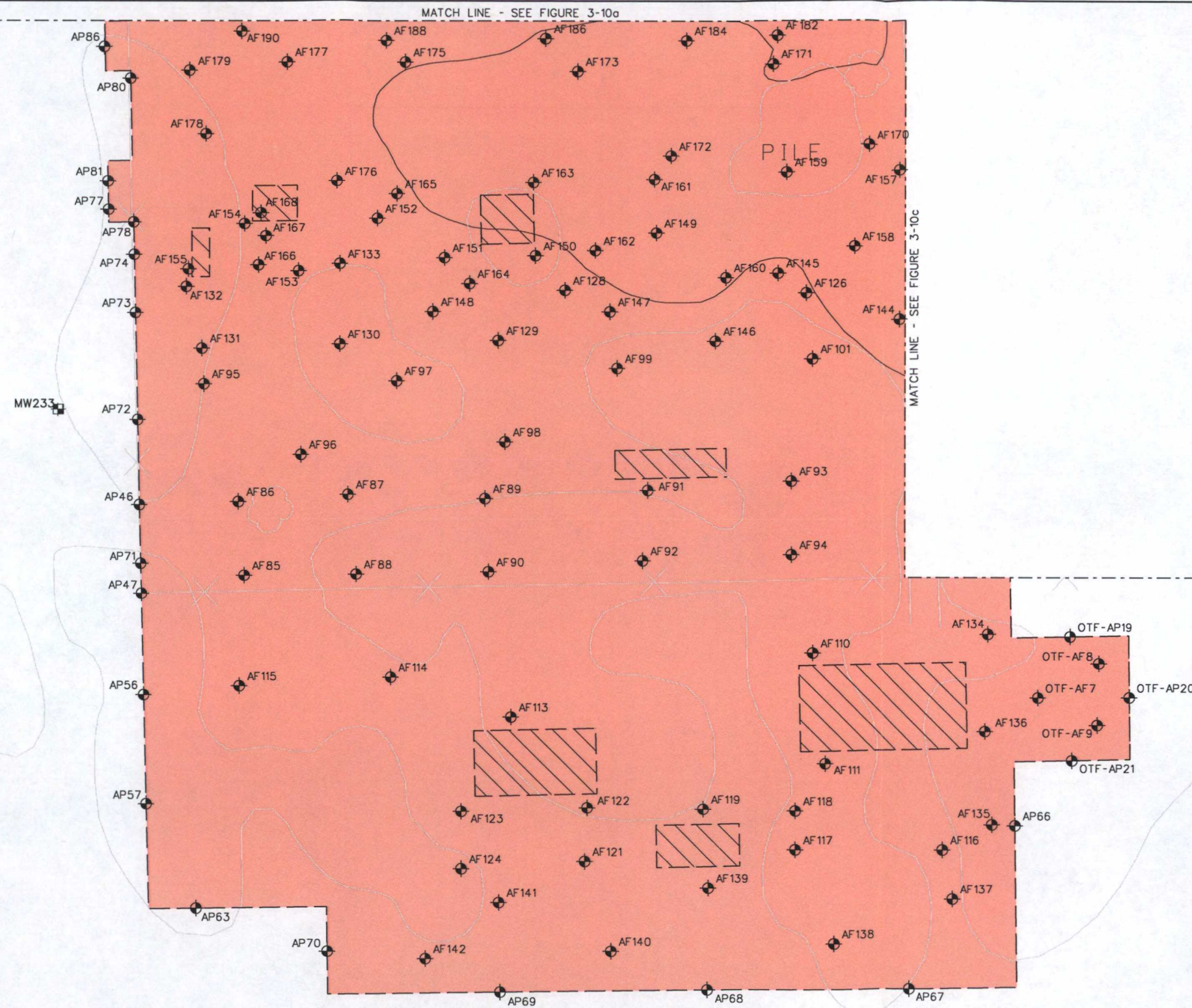
|  |                   |
|--|-------------------|
| CONTRACT NO. DACW27-97-D-0015<br>TASK ORDER NO. 4016 | SCALE<br>1" = 40' |
| VERIFY SCALE<br>0 1/2 1<br>BAR REPRESENTS ONE INCH   |                   |

RA EXCAVATION AND SAMPLING ACTIVITIES -  
SITE M3 - FLASHING GROUNDS - SOUTHEAST QUADRANT  
CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12  
PHASE 2 REMEDIAL ACTION  
JOLIET ARMY AMMUNITION PLANT  
WILMINGTON, ILLINOIS

FIGURE 3-10c



E 1319000



## LEGEND

- MW233 MONITORING WELL LOCATION AND NUMBER
- AF101 SAMPLE POINT LOCATION AND DESIGNATION
- SOILS EXCAVATED TO BEDROCK
- DEPTH OF EXCAVATION TO 2.0 FEET
- EXCAVATION BOUNDARY
- FENCE LINE

## GENERAL NOTES

1. ONLY PASSING CHARACTERIZATION AND CONFIRMATION SAMPLES ARE SHOWN. ANY SAMPLE LOCATIONS WHERE FURTHER EXCAVATION WAS CONDUCTED DUE TO SAMPLE EXCEEDANCES ARE NOT INCLUDED.
2. REFER TO TABLE 3-11 FOR ANALYTICAL RESULTS FOR THE NOTED SAMPLE LOCATIONS.



|                     |                  |
|---------------------|------------------|
| LHP<br>DEVELOPED BY | DLF<br>DRAWN BY  |
| MGC<br>APPROVED BY  | 10/12/09<br>DATE |
| REVISIONS           | DATE             |

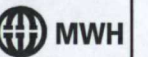
CONTRACT NO. DACW27-97-D-0015  
TASK ORDER NO. 4016

VERIFY SCALE  
0 1/2 1  
BAR REPRESENTS ONE INCH

SCALE  
1" = 40'

RA EXCAVATION AND SAMPLING ACTIVITIES -  
SITE M3 - FLASHING GROUNDS - SOUTHWEST QUADRANT  
CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12  
PHASE 2 REMEDIAL ACTION  
JOLIET ARMY AMMUNITION PLANT  
WILMINGTON, ILLINOIS

FIGURE 3-10d





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User: dlredr1  
1.  
D:\22\020\cadd\Figure 3-11.dgn Model: Default DesignScript: WWH\_Main\_Penttable\_V85\_COLOR.tbl PlotScale: 80.00  
File: L:\JOBS\2



#### LEGEND

- AF1 SAMPLE POINT LOCATION AND DESIGNATION
- DEPTH OF EXCAVATION TO 1.0 FEET
- DEPTH OF EXCAVATION TO 2.0 FEET
- EXCAVATION BOUNDARY
- FENCE LINE

#### GENERAL NOTES

1. ONLY PASSING CHARACTERIZATION AND CONFIRMATION SAMPLES ARE SHOWN. ANY SAMPLE LOCATIONS WHERE FURTHER EXCAVATION WAS CONDUCTED DUE TO SAMPLE EXCEEDANCES ARE NOT INCLUDED.
2. REFER TO TABLE 3-12 FOR ANALYTICAL RESULTS FOR THE NOTED SAMPLE LOCATIONS.



|              |          |
|--------------|----------|
| LHP          | DLF      |
| DEVELOPED BY | DRAWN BY |
| MGC          | 10/12/09 |
| APPROVED BY  | DATE     |
| REVISIONS    | DATE     |

|  |
|--|
| CONTRACT NO. DACW27-97-D-0015<br>TASK ORDER NO. 4016 |
| VERIFY SCALE   |
| 0 1/2 1  |
| BAR REPRESENTS ONE INCH                              |

SCALE  
1" = 80'

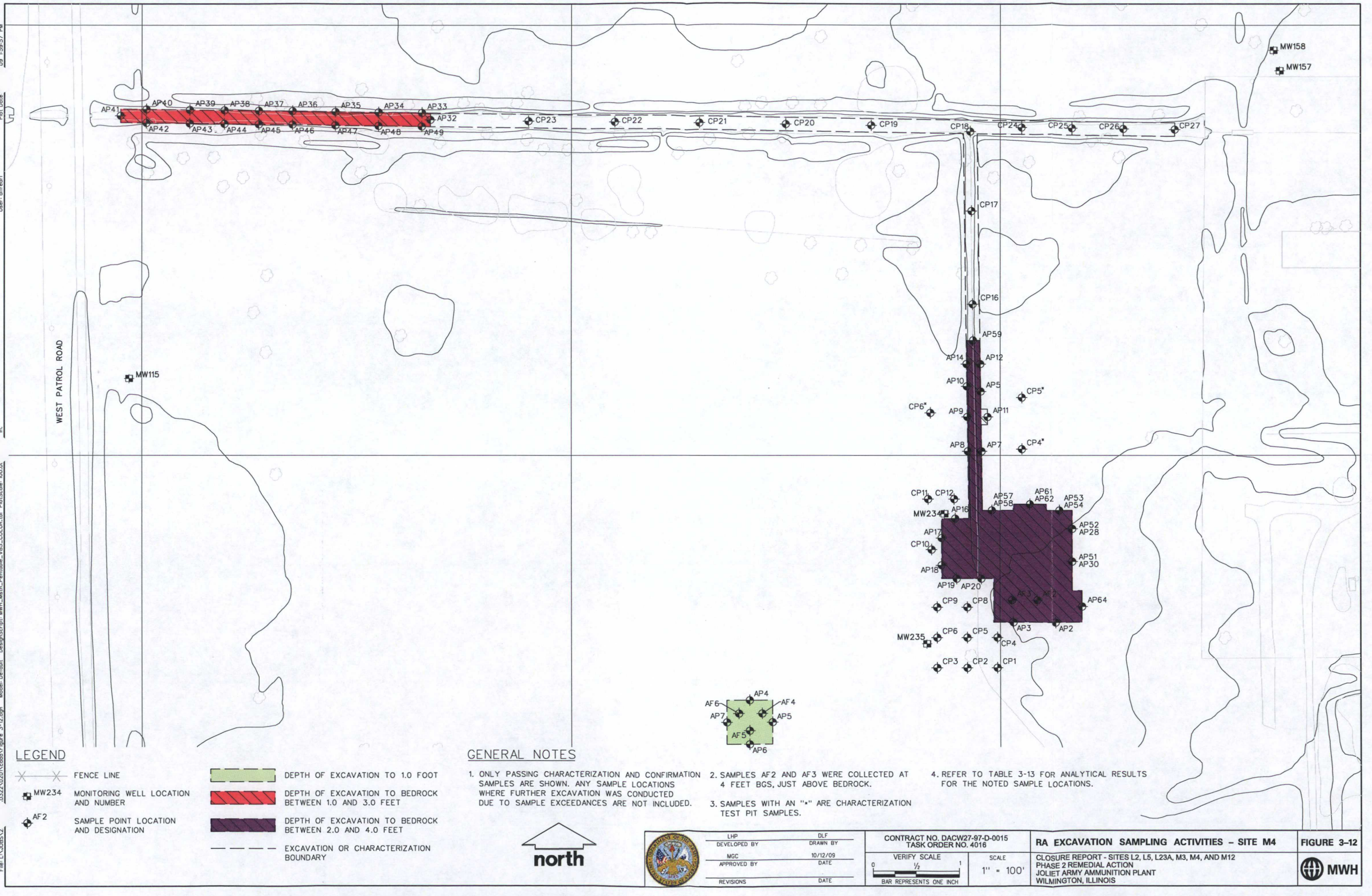
**RA EXCAVATION AND SAMPLING ACTIVITIES -  
SITE M3 - FORMER BURNING AREA**  
CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12  
PHASE 2 REMEDIAL ACTION  
JOLIET ARMY AMMUNITION PLANT  
WILMINGTON, ILLINOIS

FIGURE 3-11





09:59:57 PM  
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User: dfrdri  
in  
0322\0201\cadd\Figure 3-12.dgn Model: Default DesignScript: MWH\_Main\_Pentable\_V85\_COLOR.tbl PlotScale: 100.0  
File: L:\JOBS\2



LEGEND

- ✕ — ✕ FENCE LINE
- MW234 MONITORING WELL LOCATION AND NUMBER
- AF2 SAMPLE POINT LOCATION AND DESIGNATION
- DEPTH OF EXCAVATION TO 1.0 FOOT
- DEPTH OF EXCAVATION TO BEDROCK BETWEEN 1.0 AND 3.0 FEET
- DEPTH OF EXCAVATION TO BEDROCK BETWEEN 2.0 AND 4.0 FEET
- EXCAVATION OR CHARACTERIZATION BOUNDARY

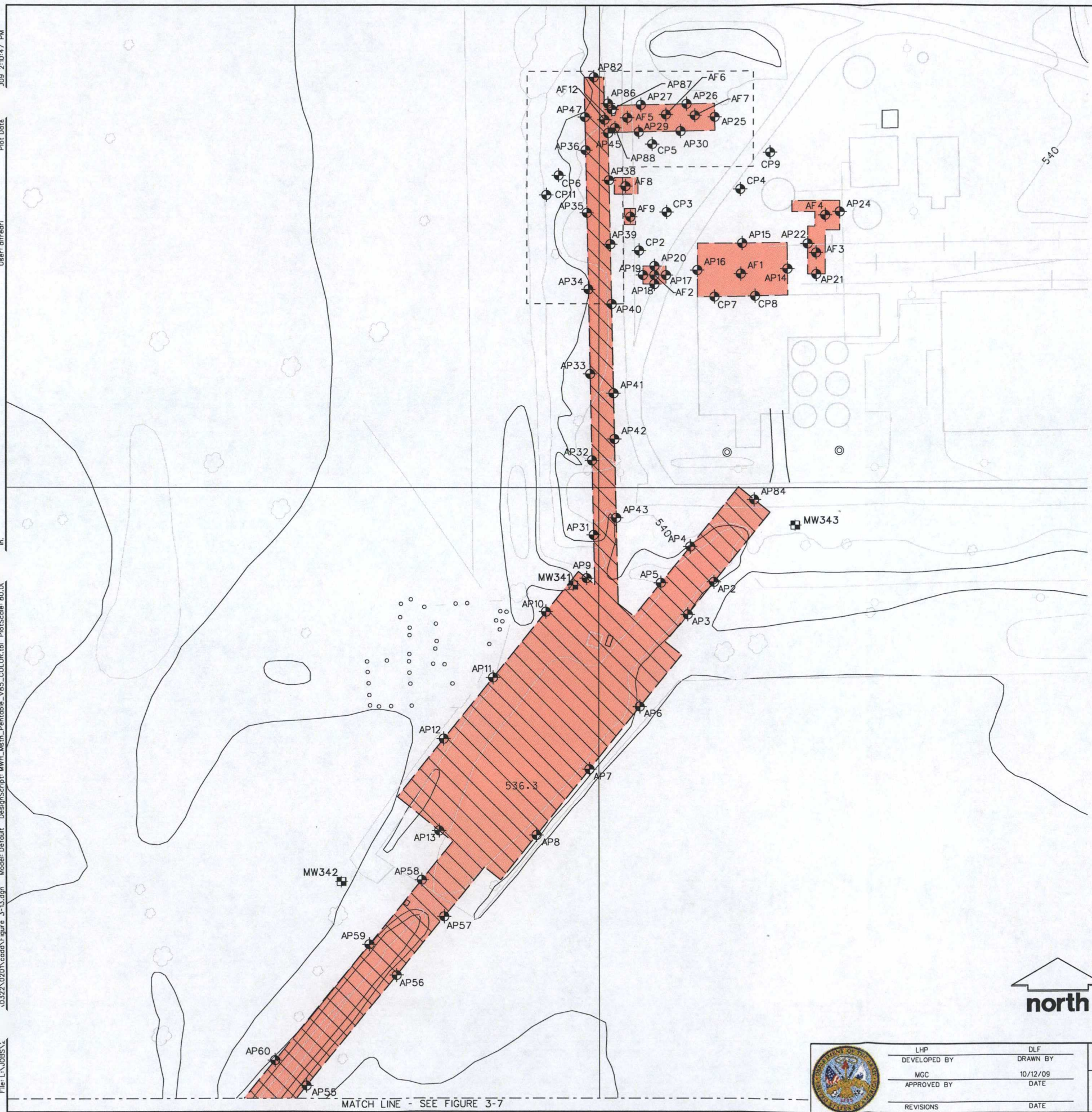
GENERAL NOTES

1. ONLY PASSING CHARACTERIZATION AND CONFIRMATION SAMPLES ARE SHOWN. ANY SAMPLE LOCATIONS WHERE FURTHER EXCAVATION WAS CONDUCTED DUE TO SAMPLE EXCEEDANCES ARE NOT INCLUDED.
2. SAMPLES AF2 AND AF3 WERE COLLECTED AT 4 FEET BGS, JUST ABOVE BEDROCK.
3. SAMPLES WITH AN "\*" ARE CHARACTERIZATION TEST PIT SAMPLES.
4. REFER TO TABLE 3-13 FOR ANALYTICAL RESULTS FOR THE NOTED SAMPLE LOCATIONS.



|           |                     |                  |  |   |   |  |
|-----------|---------------------|------------------|--|---|---|--|
|           | LHP<br>DEVELOPED BY | DLF<br>DRAWN BY  | CONTRACT NO. DACW27-97-D-0015<br>TASK ORDER NO. 4016 | RA EXCAVATION SAMPLING ACTIVITIES - SITE M4 | FIGURE 3-12   |  |
|           | MGC<br>APPROVED BY  | 10/12/09<br>DATE |  |   |   |  |
|           | VERIFICATION SCALE  |                  |  |   |   |  |
|           | SCALE<br>1" = 100'  |                  |  |   |   |  |
| REVISIONS |                     | DATE             | BAR REPRESENTS ONE INCH                              |   | CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12<br>PHASE 2 REMEDIAL ACTION<br>JOLIET ARMY AMMUNITION PLANT<br>WILMINGTON, ILLINOIS |  |
|           |                     |                  |  |   |   |  |





LEGEND

- RAILROAD TRACKS
- MW341 MONITORING WELL LOCATION AND NUMBER
- AF1 SAMPLE POINT LOCATION AND DESIGNATION
- SOILS EXCAVATED TO BEDROCK
- DEPTH OF EXCAVATION TO 2.0 FEET
- EXCAVATION BOUNDARY
- SURFICIAL RAW SULFUR BOUNDARY

GENERAL NOTES

1. ONLY PASSING CHARACTERIZATION AND CONFIRMATION SAMPLES ARE SHOWN. ANY SAMPLE LOCATIONS WHERE FURTHER EXCAVATION WAS CONDUCTED DUE TO SAMPLE EXCEEDANCES ARE NOT INCLUDED.
2. REFER TO TABLE 3-14 FOR ANALYTICAL RESULTS FOR THE NOTED SAMPLE LOCATIONS.



|  |                         |               |  |                   |  |                        |
|--|-------------------------|---------------|--|-------------------|--|------------------------|
|  | LHP DEVELOPED BY        | DLF DRAWN BY  | CONTRACT NO. DACW27-97-D-0015<br>TASK ORDER NO. 4016 |                   | <b>RA EXCAVATION AND SAMPLING ACTIVITIES -<br/>SITE M12 - WASTEWATER LAGOON</b><br>CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12<br>PHASE 2 REMEDIAL ACTION<br>JOLIET ARMY AMMUNITION PLANT<br>WILMINGTON, ILLINOIS | <b>FIGURE 3-13</b><br> |
|  | MCC APPROVED BY         | 10/12/09 DATE | VERIFY SCALE<br>0 1/2 1                              | SCALE<br>1" = 80' |  |                        |
|  | REVISIONS               |               | DATE   |                   |  |                        |
|  | BAR REPRESENTS ONE INCH |               |  |                   |  |                        |





LEGEND

- AP51 SAMPLE POINT LOCATION AND DESIGNATION
- SOILS EXCAVATED TO BEDROCK
- DEPTH OF EXCAVATION TO 2.0 FEET
- EXCAVATION BOUNDARY
- ROCK CHECK DAM

GENERAL NOTES

1. ONLY PASSING CHARACTERIZATION AND CONFIRMATION SAMPLES ARE SHOWN. ANY SAMPLE LOCATIONS WHERE FURTHER EXCAVATION WAS CONDUCTED DUE TO SAMPLE EXCEEDANCES ARE NOT INCLUDED.
2. REFER TO TABLE 3-14 FOR ANALYTICAL RESULTS FOR THE NOTED SAMPLE LOCATIONS.

0322\020\020\020\Figures\_3-14.dgn Model: Default DesignScript: MWH\_Main\_Pentable\_V85\_COLOR.tbl PlotScale: 200, 1" = 200' User: dlredri Plot Date: 10/12/09 2:15:50 PM File: L:\005\



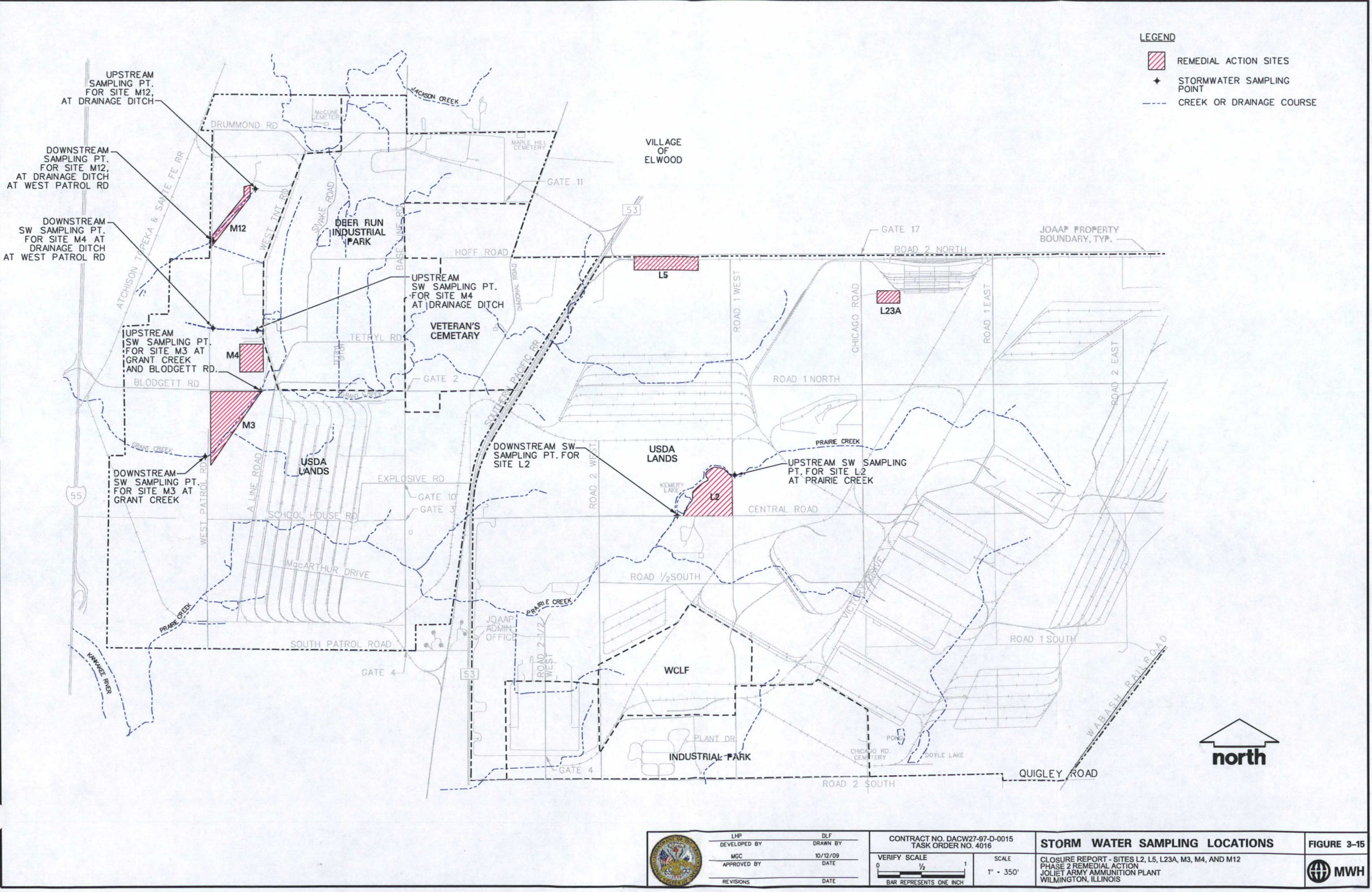
|              |          |
|--------------|----------|
| LHP          | DLF      |
| DEVELOPED BY | DRAWN BY |
| MGC          | 10/12/09 |
| APPROVED BY  | DATE     |
| REVISIONS    | DATE     |

|                               |
|-------------------------------|
| CONTRACT NO. DACW27-97-D-0015 |
| TASK ORDER NO. 4016           |
| VERIFY SCALE                  |
| 0 1/2 1                       |
| BAR REPRESENTS ONE INCH       |

|  |
|--|
| RA EXCAVATION AND SAMPLING ACTIVITIES -              |
| SITE M12 - DRAINAGE DITCH AND OUTFALL                |
| CLOSURE REPORT - SITES L2, L5, L23A, M3, M4, AND M12 |
| PHASE 2 REMEDIAL ACTION                              |
| JOLIET ARMY AMMUNITION PLANT                         |
| WILMINGTON, ILLINOIS                                 |



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## **Appendices**

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**APPENDIX A**  
**PHOTOGRAPHIC LOG**



**Client: USACE**
**Project Number: 2090900**
**Project Name: Sites L2, L5, L23A, M3, M4, and M12**
**Site Location: Joliet Army Ammunition Plant,  
Wilmington, Illinois**

**Photo 1**
**Aug 9, 2006**

Debris at the Site M3 burning areas.


**Photo 2**
**Sep 6, 2006**

Power washing scrap metal encountered at Site M3 prior to transport.


**Photo 3**
**Aug 9, 2006**

Standing liquid in the vat located at Site M3.


**Photo 4**
**Sep 6, 2006**

Equipment used for conducting the excavation at Site M3.



**Client: USACE**
**Project Number: 2090900**
**Project Name: Sites L2, L5, L23A, M3, M4, and M12**
**Site Location: Joliet Army Ammunition Plant,  
Wilmington, Illinois**

**Photo 5**
**Sep 6, 2006**
**Stockpiling at Site M3.**

**Photo 6**
**Aug 9, 2006**
**Loading soils at Site M3 in trucks to be hauled to the  
Prairie View RDF.**

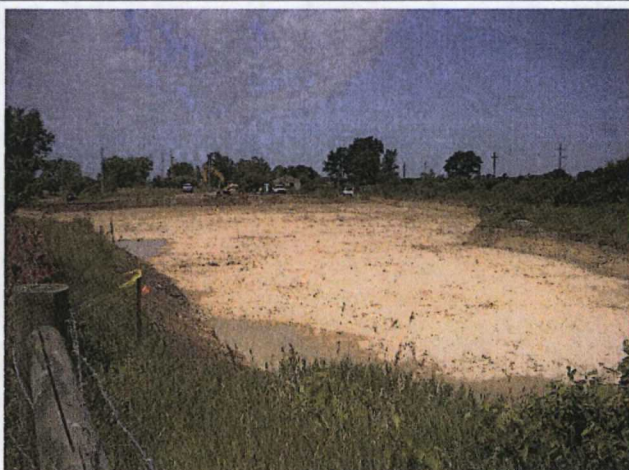
**Photo 7**
**Aug 9, 2006**
**Vat located in the southwest corner of the Site M3  
flashing grounds excavation.**

**Photo 8**
**Aug 9, 2006**
**Location of the vat in the southwest corner of the Site  
M3 flashing grounds excavation.**



**Client: USACE**
**Project Number: 2090900**
**Project Name: Sites L2, L5, L23A, M3, M4, and M12**
**Site Location: Joliet Army Ammunition Plant,  
Wilmington, Illinois**

**Photo 9**
**May 18, 2007**
**The AST at the Site L2 former Popping Furnace Area.**

**Photo 10**
**Aug 9, 2006**
**Demolition of the Popping Furnaces at Site L2.**

**Photo 11**
**Jul 13, 2007**
**The PCN excavation at the Site L5 former Junk Pile Area.**

**Photo 12**
**May 30, 2007**
**MEC encountered in the Site L5 ditch.**



**Client: USACE**
**Project Number: 2090900**
**Project Name: Sites L2, L5, L23A, M3, M4, and M12**
**Site Location: Joliet Army Ammunition Plant,  
Wilmington, Illinois**

**Photo 13**
**Nov 29, 2006**

The Site M12 ditch filled with storm water.


**Photo 14**
**Nov 29, 2006**

The Site M12 Sellite Lagoon filled with storm water.


**Photo 15**
**Aug 9, 2006**

Storm water in the excavation at the south-side of the flashing grounds at Site M3.


**Photo 16**
**Aug 9, 2006**

Stockpile covered as part of storm water management practices to prevent contamination of storm water runoff at Site M3.



**APPENDIX B**  
**WASTE PROFILES**



**Generator's Nonhazardous Waste Profile Sheet**Requested Disposal Facility Prairie View RDFProfile Number 101818IL☐ Renewal for Profile Number \_\_\_\_\_

Waste Approval Expiration Date \_\_\_\_\_

**A. Waste Generator Facility Information (must reflect location of waste generation/origin)**

1. Generator Name: U.S. Army Joliet Ammunition Plant
2. Site Address: 29401 South Rt. 53
3. City/ZIP: Wilmington, 60481
4. State: IL
5. County: Will
6. Contact Name/Title: Kurt Adams
7. Email Address: \_\_\_\_\_
8. Phone: 815-423-6841
9. FAX: 815-423-6848
10. NAICS Code: 3483
11. Generator USEPA ID #: \_\_\_\_\_
12. State ID# (if applicable): 1970450027

**B. Customer Information ☐ same as above**

P. O. Number: \_\_\_\_\_

1. Customer Name: MVH
2. Billing Address: Not Applicable
3. City, State and ZIP: \_\_\_\_\_
4. Contact Name: Kurt Adams
5. Contact Email: \_\_\_\_\_
6. Phone: 815-423-6841
7. Transporter Name: \_\_\_\_\_
8. Transporter ID # (if appl.): \_\_\_\_\_
9. Transporter Address: \_\_\_\_\_
10. City, State and ZIP: \_\_\_\_\_
- FAX: 815-423-6848

**C. Waste Stream Information****1. DESCRIPTION**a. Common Waste Name: L2 Concrete

State Waste Code(s): \_\_\_\_\_

b. Describe Process Generating Waste or Source of Contamination:

Site L2 concrete demolition.c. Typical Color(s): Grayd. Strong Odor? ☐ Yes ☒ No Describe: \_\_\_\_\_e. Physical State at 70°F: ☒ Solid ☐ Liquid ☐ Powder ☐ Semi-Solid or Sludge ☐ Other: \_\_\_\_\_f. Layers? ☐ Single layer ☐ Multi-layer ☒ NAg. Water Reactive? ☐ Yes ☒ No If Yes, Describe: \_\_\_\_\_h. Free Liquid Range (%): \_\_\_\_\_ to \_\_\_\_\_ ☒ NA(solid)i. pH Range: ☐ ≤2 ☒ 2.1-12.4 ☐ ≥12.5 ☐ NA(solid) ☐ Actual: \_\_\_\_\_j. Liquid Flash Point: ☐ < 140°F ☒ ≥ 140°F ☐ NA(solid) ☐ Actual: \_\_\_\_\_k. Flammable Solid: ☐ Yes ☒ Nol. Physical Constituents: List all constituents of waste stream - (e.g. Soil 0-80%, Wood 0-20%): ☐ (See Attached)

| Constituents (Total Composition Must be ≥ 100%) | Concentration % | Constituents (Total Composition Must be ≥ 100%) | Concentration % |
|---|-----------------|---|-----------------|
| 1. <u>Concrete</u>                              | <u>100</u>      | 4. _____  | _____           |
| 2. <u>Steel &amp;lt;1%</u>                      | _____           | 5. _____  | _____           |
| 3. _____  | _____           | 6. _____  | _____           |

**2. ESTIMATED QUANTITY OF WASTE AND SHIPPING INFORMATION**a. ☒ Event ☐ Base/Ongoing (Check One)b. Estimated Annual Quantity: 1000 ☒ Tons ☐ Cubic Yards ☐ Drums ☐ Gallons ☐ Other (specify): \_\_\_\_\_c. Shipping Frequency: \_\_\_\_\_ Units per ☐ Month ☐ Quarter ☐ Year ☒ One Time ☐ Otherd. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If yes, answer e.) ☐ Yes ☒ No

e. USDOT Shipping Description (if applicable): \_\_\_\_\_

**3. SAFETY REQUIREMENTS (Handling, PPE, etc.): None**





# Generator's Nonhazardous Waste Profile Sheet

101818L

## D. Regulatory Status (Please check appropriate responses)

1. Is this a USEPA (40 CFR Part 261)/State hazardous waste? If yes, contact your sales representative. ☐ Yes ☒ No
2. Is this waste included in one or more of categories below (Check all that apply)? If yes, attach supporting documentation. ☐ Yes ☒ No
  - ☐ Delisted Hazardous Waste ☐ Excluded Wastes Under 40 CFR 261.4
  - ☐ Treated Hazardous Waste Debris ☐ Treated Characteristic Hazardous Waste
3. Is the waste from a Federal (40 CFR 300, Appendix B) or state mandated clean-up? If yes, see instructions. ☐ Yes ☒ No
4. Does the waste represented by this waste profile sheet contain radioactive material? ☐ Yes ☒ No
  - a. If yes, is disposal regulated by the Nuclear Regulatory Commission? ☐ Yes ☐ No
  - b. If yes, is disposal regulated by a State Agency for radioactive waste/NORM? ☐ Yes ☐ No
5. Does the waste represented by this waste profile sheet contain concentrations of regulated Polychlorinated Biphenyls (PCBs)? ☐ Yes ☒ No
  - a. If yes, is disposal regulated under TSCA? ☐ Yes ☐ No
6. Does the waste contain untreated, regulated, medical or infectious waste? ☐ Yes ☒ No
7. Does the waste contain asbestos? ☐ Yes ☒ No If Yes, ☐ Friable ☐ Non Friable
8. Is this profile for remediation waste from a facility that is a major source of Hazardous Air Pollutants (Site Remediation NESHAP, 40 CFR 63 subpart GGGGG)? ☐ Yes ☒ No

If yes, does the waste contain <500 ppmw VOHAPs at the point of determination? ☐ Yes ☐ No

## E. Generator Certification (Please read and certify by signature below)

By signing this Generator's Waste Profile Sheet, I hereby certify that all:

1. Information submitted in this profile and all attached documents contain true and accurate descriptions of the waste material;
  2. Relevant information within the possession of the Generator regarding known or suspected hazards pertaining to this waste has been disclosed to WM/the Contractor;
  3. Analytical data attached pertaining to the profiled waste was derived from testing a representative sample in accordance with 40 CFR 261.20(c) or equivalent rules; and
  4. Changes that occur in the character of the waste (i.e. changes in the process or new analytical) will be identified by the Generator and disclosed to WM (and the Contractor if applicable) prior to providing the waste to WM (and the Contractor if applicable).
  5. Check all that apply:
    - ☒ Attached analytical pertains to the waste. Identify laboratory & sample ID #'s and parameters tested:  
STL Job Number 500-4221-1 # Pages: 38
    - ☐ Only the analyses identified on the attachment pertain to the waste (identify by laboratory & sample ID #'s and parameters tested).  
Attachment #: \_\_\_\_\_
    - ☐ Additional information necessary to characterize the profiled waste has been attached (other than analytical).  
Indicate the number of attached pages: \_\_\_\_\_
    - ☐ I am an agent signing on behalf of the Generator, and the delegation of authority to me from the Generator for this signature is available upon request.
    - ☒ By Generator process knowledge, the following waste is not a listed waste and is below all TCLP regulatory limits.
- Certification Signature: Mark M. Fruen Title: Environmental Engineer
- Company Name: US Army Corps of Engineers Name (Print): Mark M. Fruen
- Date: May 31, 2007 On the behalf of the US Dept. of Defense

## FOR WM USE ONLY

- Management Method: ☐ Landfill ☐ Bioremediation Approval Decision: ☐ Approved ☐ Not Approved
- ☐ Non-hazardous solidification ☐ Other: \_\_\_\_\_ Waste Approval Expiration Date: \_\_\_\_\_
- Management Facility Precautions, Special Handling Procedures or Limitation on approval: \_\_\_\_\_
- ☐ Shall not contain free liquid
- ☐ Shipment must be scheduled into disposal facility
- ☐ Approval Number must accompany each shipment
- ☐ Waste Manifest must accompany load
- WM Authorization Name / Title: \_\_\_\_\_ Date: \_\_\_\_\_
- State Authorization (if Required): \_\_\_\_\_ Date: \_\_\_\_\_



**Generator's Nonhazardous Waste Profile Sheet**Requested Disposal Facility Prairie View RDFProfile Number 1018171L☐ Renewal for Profile Number \_\_\_\_\_

Waste Approval Expiration Date \_\_\_\_\_

**A. Waste Generator Facility Information (must reflect location of waste generation/origin)**

1. Generator Name: U.S. Army Joliet Ammunition Plant
2. Site Address: 29401 South Rt. 53
3. City/ZIP: Wilmington, 60481
4. State: IL
5. County: Will
6. Contact Name/Title: Kurt Adams
7. Email Address: \_\_\_\_\_
8. Phone: 815-423-6841
9. FAX: 815-423-6848
10. NAICS Code: 3483
11. Generator USEPA ID #: \_\_\_\_\_
12. State ID# (if applicable): 1970450027

**B. Customer Information** ☐ same as above

P. O. Number: \_\_\_\_\_

1. Customer Name: MVH
2. Billing Address: Not Applicable
3. City, State and ZIP: \_\_\_\_\_
4. Contact Name: Kurt Adams
5. Contact Email: \_\_\_\_\_
6. Phone: 815-423-6841
7. Transporter Name: \_\_\_\_\_
8. Transporter ID # (if appl.): \_\_\_\_\_
9. Transporter Address: \_\_\_\_\_
10. City, State and ZIP: \_\_\_\_\_

**C. Waste Stream Information****1. DESCRIPTION**a. Common Waste Name: L2 Soil

State Waste Code(s): \_\_\_\_\_

b. Describe Process Generating Waste or Source of Contamination:

Excavation of soils at Site L2.c. Typical Color(s): Brownd. Strong Odor? ☐ Yes ☒ No Describe: \_\_\_\_\_e. Physical State at 70°F: ☒ Solid ☐ Liquid ☐ Powder ☐ Semi-Solid or Sludge ☐ Other: \_\_\_\_\_f. Layers? ☐ Single layer ☐ Multi-layer ☒ NAg. Water Reactive? ☐ Yes ☒ No If Yes, Describe: \_\_\_\_\_h. Free Liquid Range (%): \_\_\_\_\_ to \_\_\_\_\_ ☒ NA(solid)i. pH Range: ☐ ≤2 ☒ 2.1-12.4 ☐ ≥12.5 ☐ NA(solid) ☐ Actual: \_\_\_\_\_j. Liquid Flash Point: ☐ < 140°F ☒ ≥ 140°F ☐ NA(solid) ☐ Actual: \_\_\_\_\_k. Flammable Solid: ☐ Yes ☒ Nol. Physical Constituents: List all constituents of waste stream - (e.g. Soil 0-80%, Wood 0-20%): ☐ (See Attached)

| Constituents (Total Composition Must be ≥ 100%) | Concentration % | Constituents (Total Composition Must be ≥ 100%) | Concentration % |
|---|-----------------|---|-----------------|
| 1. <u>Soil</u>                                  | <u>100%</u>     | 4. _____  | _____           |
| 2. _____  | _____           | 5. _____  | _____           |
| 3. _____  | _____           | 6. _____  | _____           |

**2. ESTIMATED QUANTITY OF WASTE AND SHIPPING INFORMATION**a. ☒ Event ☐ Base/Ongoing (Check One)b. Estimated Annual Quantity: 1000 ☒ Tons ☐ Cubic Yards ☐ Drums ☐ Gallons ☐ Other (specify): \_\_\_\_\_c. Shipping Frequency: \_\_\_\_\_ Units per ☐ Month ☐ Quarter ☐ Year ☒ One Time ☐ Otherd. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If yes, answer e.) ☐ Yes ☒ No

e. USDOT Shipping Description (if applicable): \_\_\_\_\_

**3. SAFETY REQUIREMENTS (Handling, PPE, etc.):** None





# Generator's Nonhazardous Waste Profile Sheet

1018171L

## D. Regulatory Status (Please check appropriate responses)

1. Is this a USEPA (40 CFR Part 261)/State hazardous waste? If yes, contact your sales representative. ☐ Yes ☒ No
2. Is this waste included in one or more of categories below (Check all that apply)? If yes, attach supporting documentation. ☐ Yes ☒ No
  - ☐ Delisted Hazardous Waste ☐ Excluded Wastes Under 40 CFR 261.4
  - ☐ Treated Hazardous Waste Debris ☐ Treated Characteristic Hazardous Waste
3. Is the waste from a Federal (40 CFR 300, Appendix B) or state mandated clean-up? If yes, see instructions. ☐ Yes ☒ No
4. Does the waste represented by this waste profile sheet contain radioactive material? ☐ Yes ☒ No
  - a. If yes, is disposal regulated by the Nuclear Regulatory Commission? ☐ Yes ☐ No
  - b. If yes, is disposal regulated by a State Agency for radioactive waste/NORM? ☐ Yes ☐ No
5. Does the waste represented by this waste profile sheet contain concentrations of regulated Polychlorinated Biphenyls (PCBs)? ☐ Yes ☒ No
  - a. If yes, is disposal regulated under TSCA? ☐ Yes ☐ No
6. Does the waste contain untreated, regulated, medical or infectious waste? ☐ Yes ☒ No
7. Does the waste contain asbestos? ☐ Yes ☒ No If Yes, ☐ Friable ☐ Non Friable
8. Is this profile for remediation waste from a facility that is a major source of Hazardous Air Pollutants (Site Remediation NESHAP, 40 CFR 63 subpart GGGGG)? ☐ Yes ☒ No

If yes, does the waste contain <500 ppmw VOHAPs at the point of determination? ☐ Yes ☐ No

## E. Generator Certification (Please read and certify by signature below)

By signing this Generator's Waste Profile Sheet, I hereby certify that all:

1. Information submitted in this profile and all attached documents contain true and accurate descriptions of the waste material;
2. Relevant information within the possession of the Generator regarding known or suspected hazards pertaining to this waste has been disclosed to WM/the Contractor;
3. Analytical data attached pertaining to the profiled waste was derived from testing a representative sample in accordance with 40 CFR 261.20(c) or equivalent rules; and
4. Changes that occur in the character of the waste (i.e. changes in the process or new analytical) will be identified by the Generator and disclosed to WM (and the Contractor if applicable) prior to providing the waste to WM (and the Contractor if applicable).
5. Check all that apply:
  - ☒ Attached analytical pertains to the waste. Identify laboratory & sample ID #'s and parameters tested: STL Job Number 500-4221-2 # Pages: 39
  - ☐ Only the analyses identified on the attachment pertain to the waste (identify by laboratory & sample ID #'s and parameters tested). Attachment #: \_\_\_\_\_
  - ☐ Additional information necessary to characterize the profiled waste has been attached (other than analytical). Indicate the number of attached pages: \_\_\_\_\_
  - ☐ I am an agent signing on behalf of the Generator, and the delegation of authority to me from the Generator for this signature is available upon request.
  - ☒ By Generator process knowledge, the following waste is not a listed waste and is below all TCLP regulatory limits.

Certification Signature: Mark M. Frueh

Title: Environmental Engineer

Company Name: US Army Corps of Engineers

Name (Print): MARK M. FRUEH

Date: May 31, 2007

On behalf of the US Dept. of Defense

## FOR WM USE ONLY

Management Method: ☐ Landfill ☐ Bioremediation

Approval Decision: ☐ Approved ☐ Not Approved

☐ Non-hazardous solidification ☐ Other: \_\_\_\_\_

Waste Approval Expiration Date: \_\_\_\_\_

Management Facility Precautions, Special Handling Procedures or Limitation on approval: \_\_\_\_\_

☐ Shall not contain free liquid

☐ Shipment must be scheduled into disposal facility

☐ Approval Number must accompany each shipment

☐ Waste Manifest must accompany load

WM Authorization Name / Title: \_\_\_\_\_

Date: \_\_\_\_\_

State Authorization (if Required): \_\_\_\_\_

Date: \_\_\_\_\_



# Generator's Nonhazardous Waste Profile Sheet



Requested Disposal Facility Prairie View RDF

Profile Number 102055IL

☐ Renewal for Profile Number \_\_\_\_\_

Waste Approval Expiration Date 07-01-08 BK

## A. Waste Generator Facility Information (must reflect location of waste generation/origin)

1. Generator Name: U.S. Army
2. Site Address: 29407 S. Route 53
3. City/ZIP: Wilmington, 60481
4. State: IL
5. County: Will
6. Contact Name/Title: Jared Schmidt
7. Email Address: jared.schmidt@mwhglobal.com
8. Phone: 815-423-6841
9. FAX: 815-423-6848
10. NAICS Code: \_\_\_\_\_
11. Generator USEPA ID #: \_\_\_\_\_
12. State ID# (if applicable): 1970450027

## B. Customer Information ☐ same as above

P. O. Number: \_\_\_\_\_

1. Customer Name: MWH
2. Billing Address: 29407 S. Route 53
3. City, State and ZIP: Wilmington, IL, 60481
4. Contact Name: Jared Schmidt
5. Contact Email: jared.schmidt@mwhglobal.com
6. Phone: 815-423-6841
7. Transporter Name: \_\_\_\_\_
8. Transporter ID # (if appl.): \_\_\_\_\_
9. Transporter Address: \_\_\_\_\_
10. City, State and ZIP: \_\_\_\_\_

## C. Waste Stream Information

### 1. DESCRIPTION

a. Common Waste Name: L5 Ditch Soils

State Waste Code(s): \_\_\_\_\_

b. Describe Process Generating Waste or Source of Contamination:

Excavation of site L5 ditch soils

c. Typical Color(s): Brown

d. Strong Odor? ☐ Yes ☒ No Describe: \_\_\_\_\_

e. Physical State at 70°F: ☒ Solid ☐ Liquid ☐ Powder ☐ Semi-Solid or Sludge ☐ Other: \_\_\_\_\_

f. Layers? ☒ Single layer ☐ Multi-layer ☐ NA

g. Water Reactive? ☐ Yes ☒ No If Yes, Describe: \_\_\_\_\_

h. Free Liquid Range (%): \_\_\_\_\_ to \_\_\_\_\_ ☒ NA(solid)

i. pH Range: ☐ ≤2 ☒ 2.1-12.4 ☐ ≥12.5 ☐ NA(solid) ☐ Actual: \_\_\_\_\_

j. Liquid Flash Point: ☐ < 140°F ☐ ≥ 140°F ☒ NA(solid) ☐ Actual: \_\_\_\_\_

k. Flammable Solid: ☐ Yes ☒ No

l. Physical Constituents: List all constituents of waste stream - (e.g. Soil 0-80%, Wood 0-20%): ☐ (See Attached)

| Constituents (Total Composition Must be > 100%) | Lower Range | Unit of Measure | Upper Range | Unit of Measure |
|---|-------------|-----------------|-------------|-----------------|
| 1. Soil   | 100%        |                 |             |                 |
| 2. _____  |             |                 |             |                 |
| 3. _____  |             |                 |             |                 |
| 4. _____  |             |                 |             |                 |
| 5. _____  |             |                 |             |                 |
| 6. _____  |             |                 |             |                 |

### 2. ESTIMATED QUANTITY OF WASTE AND SHIPPING INFORMATION

a. ☒ Event ☐ Base/Ongoing (Check One)

b. Estimated Annual Quantity: 1500 ☒ Tons ☐ Cubic Yards ☐ Drums ☐ Gallons ☐ Other (specify): \_\_\_\_\_

c. Shipping Frequency: 90 Units per ☐ Month ☐ Quarter ☐ Year ☒ One Time ☐ Other

d. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If yes, answer e.) ☐ Yes ☒ No

e. USDOT Shipping Description (if applicable): \_\_\_\_\_

### 3. SAFETY REQUIREMENTS (Handling, PPE, etc.): None





# Generator's Nonhazardous Waste Profile Sheet

102055IL

## D. Regulatory Status (Please check appropriate responses)

1. Is this a USEPA (40 CFR Part 261)/State hazardous waste? If yes, contact your sales representative. ☐ Yes ☒ No
2. Is this waste included in one or more of categories below (Check all that apply)? If yes, attach supporting documentation. ☐ Yes ☒ No
  - ☐ Delisted Hazardous Waste
  - ☐ Excluded Wastes Under 40 CFR 261.4
  - ☐ Treated Hazardous Waste Debris
  - ☐ Treated Characteristic Hazardous Waste
3. Is the waste from a Federal (40 CFR 300, Appendix B) or state mandated clean-up? If yes, see instructions. ☒ Yes ☐ No
4. Does the waste represented by this waste profile sheet contain radioactive material? ☐ Yes ☒ No
  - a. If yes, is disposal regulated by the Nuclear Regulatory Commission? ☐ Yes ☐ No
  - b. If yes, is disposal regulated by a State Agency for radioactive waste/NORM? ☐ Yes ☐ No
5. Does the waste represented by this waste profile sheet contain concentrations of regulated Polychlorinated Biphenyls (PCBs)? ☐ Yes ☒ No
  - a. If yes, is disposal regulated under TSCA? ☐ Yes ☐ No
6. Does the waste contain untreated, regulated, medical or infectious waste? ☐ Yes ☒ No
7. Does the waste contain asbestos? ☐ Yes ☒ No If Yes, ☐ Friable ☐ Non Friable
8. Is this profile for remediation waste from a facility that is a major source of Hazardous Air Pollutants (Site Remediation NESHAP, 40 CFR 63 subpart GGGGG)? ☐ Yes ☒ No  
If yes, does the waste contain <500 ppmw VOHAPs at the point of determination? ☐ Yes ☐ No

## E. Generator Certification (Please read and certify by signature below)

By signing this Generator's Waste Profile Sheet, I hereby certify that all:

1. Information submitted in this profile and all attached documents contain true and accurate descriptions of the waste material;
2. Relevant information within the possession of the Generator regarding known or suspected hazards pertaining to this waste has been disclosed to WM/the Contractor;
3. Analytical data attached pertaining to the profiled waste was derived from testing a representative sample in accordance with 40 CFR 261.20(c) or equivalent rules; and
4. Changes that occur in the character of the waste (i.e. changes in the process or new analytical) will be identified by the Generator and disclosed to WM (and the Contractor if applicable) prior to providing the waste to WM (and the Contractor if applicable).
5. Check all that apply:

☐ Attached analytical pertains to the waste. Identify laboratory & sample ID #'s and parameters tested: \_\_\_\_\_

# Pages: \_\_\_\_\_

☐ Only the analyses identified on the attachment pertain to the waste (identify by laboratory & sample ID #'s and parameters tested). Attachment #: \_\_\_\_\_

☐ Additional information necessary to characterize the profiled waste has been attached (other than analytical).

Indicate the number of attached pages: \_\_\_\_\_

☐ I am an agent signing on behalf of the Generator, and the delegation of authority to me from the Generator for this signature is available upon request.

☐ By Generator process knowledge, the following waste is not a listed waste and is below all TCLP regulatory limits.

Certification Signature: Mack M. Fruen

Title: Environmental Engineer - US Army Corps of Engineers

Company Name: US Army Corps of Engineers

Name (Print): Mack M. Fruen

Date: July 27, 2007

## FOR WM USE ONLY

Management Method: ☒ Landfill ☐ Bioremediation

Approval Decision: ☒ Approved ☐ Not Approved

☐ Non-hazardous solidification ☐ Other: 25 Cod disposal

Waste Approval Expiration Date: 07-01-08

Management Facility Precautions, Special Handling Procedures or Limitation

☐ Shall not contain free liquid

on approval: Approved as special waste.

☐ Shipment must be scheduled into disposal facility

☐ Approval Number must accompany each shipment

☒ Waste Manifest must accompany load

WM Authorization Name / Title: Joseph Kesh - WMA Date: 07-30-07

State Authorization (if Required): \_\_\_\_\_ Date: \_\_\_\_\_



### Generator's Nonhazardous Waste Profile Sheet



Requested Disposal Facility Prairie View RDF

Profile Number 100680IL

☐ Renewal for Profile Number \_\_\_\_\_

Waste Approval Expiration Date 04-01-08 BK

#### A. Waste Generator Facility Information (must reflect location of waste generation/origin)

1. Generator Name: U.S. Army  
2. Site Address: 29407 S. Route 53  
3. City/ZIP: Wilmington, 60481  
4. State: IL  
5. County: Will  
6. Contact Name/Title: Jared Schmidt  
7. Email Address: jared.schmidt@mwhglobal.com  
8. Phone: 815-423-6841 9. FAX: 815-423-6848  
10. NAICS Code: \_\_\_\_\_  
11. Generator USEPA ID #: \_\_\_\_\_  
12. State ID# (if applicable): 1970450027

#### B. Customer Information ☐ same as above

P. O. Number: \_\_\_\_\_

1. Customer Name: MWH  
2. Billing Address: 29407 S. Route 53  
3. City, State and ZIP: Wilmington, IL 60481  
4. Contact Name: Jared Schmidt  
5. Contact Email: jared.schmidt@mwhglobal.com  
6. Phone: 815-423-6841 FAX: 815-423-6848  
7. Transporter Name: \_\_\_\_\_  
8. Transporter ID # (if appl.): \_\_\_\_\_  
9. Transporter Address: \_\_\_\_\_  
10. City, State and ZIP: \_\_\_\_\_

#### C. Waste Stream Information

1. DESCRIPTION  
a. Common Waste Name: L5 soil State Waste Code(s): \_\_\_\_\_  
b. Describe Process Generating Waste or Source of Contamination:  
Excavation of L5 soil.  
c. Typical Color(s): brown  
d. Strong Odor? ☐ Yes ☒ No Describe: \_\_\_\_\_  
e. Physical State at 70°F: ☒ Solid ☐ Liquid ☐ Powder ☐ Semi-Solid or Sludge ☐ Other: \_\_\_\_\_  
f. Layers? ☒ Single layer ☐ Multi-layer ☐ NA  
g. Water Reactive? ☐ Yes ☒ No IF Yes, Describe: \_\_\_\_\_  
h. Free Liquid Range (%): \_\_\_\_\_ to \_\_\_\_\_ ☒ NA(solid)  
i. pH Range: ☐ ≤2 ☒ 2.1-12.4 ☐ ≥12.5 ☐ NA(solid) ☐ Actual: \_\_\_\_\_  
j. Liquid Flash Point: ☐ < 140°F ☐ ≥ 140°F ☒ NA(solid) ☐ Actual: \_\_\_\_\_  
k. Flammable Solid: ☐ Yes ☒ No  
L. Physical Constituents: List all constituents of waste stream - (e.g. Soil 0-80%. Wood 0-20%): ☐ (See Attached)

| Constituents (Total Composition Must be ≥ 100%) | Concentration % | Constituents (Total Composition Must be ≥ 100%) | Concentration % |
|---|-----------------|---|-----------------|
| 1. <u>Soil</u>                                  | <u>97%</u>      | 4. _____  | _____           |
| 2. <u>Gravel</u>                                | <u>3%</u>       | 5. _____  | _____           |
| 3. <u>Wood and metal debris</u>                 | <u>&lt;1%</u>   | 6. _____  | _____           |

#### 2. ESTIMATED QUANTITY OF WASTE AND SHIPPING INFORMATION

a. ☒ Event ☐ Base/Ongoing (Check One)  
b. Estimated Annual Quantity: 4500 ☐ Tons ☒ Cubic Yards ☐ Drums ☐ Gallons ☐ Other (specify): \_\_\_\_\_  
c. Shipping Frequency: 200 Units per ☐ Month ☐ Quarter ☐ Year ☒ One Time ☐ Other  
d. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If yes, answer e.) ☐ Yes ☒ No  
e. USDOT Shipping Description (if applicable): \_\_\_\_\_  
3. SAFETY REQUIREMENTS (Handling, PPE, etc.): \_\_\_\_\_





## Generator's Nonhazardous Waste Profile Sheet

100680IL

### D. Regulatory Status (Please check appropriate responses)

1. Is this a USEPA (40 CFR Part 261)/State hazardous waste? If yes, contact your sales representative. ☐ Yes ☒ No
2. Is this waste included in one or more of categories below (Check all that apply)? If yes, attach supporting documentation. ☐ Yes ☒ No
  - ☐ Delisted Hazardous Waste
  - ☐ Excluded Wastes Under 40 CFR 261.4
  - ☐ Treated Hazardous Waste Debris
  - ☐ Treated Characteristic Hazardous Waste
3. Is the waste from a Federal (40 CFR 300, Appendix B) or state mandated clean-up? If yes, see instructions. ☒ Yes ☐ No
4. Does the waste represented by this waste profile sheet contain radioactive material? ☐ Yes ☒ No
  - a. If yes, is disposal regulated by the Nuclear Regulatory Commission? ☐ Yes ☐ No
  - b. If yes, is disposal regulated by a State Agency for radioactive waste/NORM? ☐ Yes ☐ No
5. Does the waste represented by this waste profile sheet contain concentrations of regulated Polychlorinated Biphenyls (PCBs)? ☐ Yes ☒ No
  - a. If yes, is disposal regulated under TSCA? ☐ Yes ☐ No
6. Does the waste contain untreated, regulated, medical or infectious waste? ☐ Yes ☒ No
7. Does the waste contain asbestos? ☐ Yes ☒ No If Yes, ☐ Friable ☐ Non Friable
8. Is this profile for remediation waste from a facility that is a major source of Hazardous Air Pollutants (Site Remediation NESHAP, 40 CFR 63 subpart GGGGG)? ☐ Yes ☒ No  
If yes, does the waste contain <500 ppmw VOHAPs at the point of determination? ☐ Yes ☐ No

### E. Generator Certification (Please read and certify by signature below)

By signing this Generator's Waste Profile Sheet, I hereby certify that all:

1. Information submitted in this profile and all attached documents contain true and accurate descriptions of the waste material;
2. Relevant information within the possession of the Generator regarding known or suspected hazards pertaining to this waste has been disclosed to WM/the Contractor;
3. Analytical data attached pertaining to the profiled waste was derived from testing a representative sample in accordance with 40 CFR 261.20(c) or equivalent rules; and
4. Changes that occur in the character of the waste (i.e. changes in the process or new analytical) will be identified by the Generator and disclosed to WM (and the Contractor if applicable) prior to providing the waste to WM (and the Contractor if applicable).
5. Check all that apply:
  - ☒ Attached analytical pertains to the waste. Identify laboratory & sample ID #'s and parameters tested:  
Sewern Trent Laboratory, JPLS-PCN Profile, PCN, PCB, VOC TCLP, SVOC TCLP, RCRA Metals TCLP # Pages: 70
  - ☐ Only the analyses identified on the attachment pertain to the waste (Identify by laboratory & sample ID #'s and parameters tested).  
Attachment #: \_\_\_\_\_
  - ☒ Additional information necessary to characterize the profiled waste has been attached (other than analytical).  
Indicate the number of attached pages: 2
  - ☐ I am an agent signing on behalf of the Generator, and the delegation of authority to me from the Generator for this signature is available upon request.
  - ☒ By Generator process knowledge, the following waste is not a listed waste and is below all TCLP regulatory limits.

Certification Signature: Mark M. Frien Title: Environmental Engineer  
Company Name: US Army Corps of Engineers Name (Print): MARK M. FRIEN  
Date: April 2, 2007

### FOR WM USE ONLY

Management Method: ☒ Landfill ☐ Bioremediation Approval Decision: ☒ Approved ☐ Not Approved  
☐ Non-hazardous solidification ☐ Other: 25 land disposal Waste Approval Expiration Date: 04-01-08  
Management Facility Precautions, Special Handling Procedures or Limitation on approval: Approved as special waste.  
Avoid contact with waste due to PCNs. ☐ Shall not contain free liquid  
Bury by the end of the operating day. ☐ Shipment must be scheduled into disposal facility  
WM Authorization Name / Title: Joe K. / Joseph K. Kahan ☐ Approval Number must accompany each shipment  
State Authorization (If Required): \_\_\_\_\_ ☒ Waste Manifest must accompany load  
Date: 04-23-07



Generator's Nonhazardous Waste Profile Sheet



Requested Disposal Facility Prairie View

Profile Number: 100703IL

☐ Renewal for Profile Number

Waste Approval Expiration Date 04-01-08 OK

A. Waste Generator Facility Information (must reflect location of waste generation/origin)

1. Generator Name: U.S. Army  
2. Site Address: 29407 S. Route 53  
3. City/ZIP: Wilmington, 60481  
4. State: IL  
5. County: Will  
6. Contact Name/Title: Jared Schmidt  
7. Email Address: jared.schmidt@mwhglobal.com  
8. Phone: 815-423-6841 9. FAX: 815-423-6848  
10. NAICS Code: \_\_\_\_\_  
11. Generator USEPA ID #: \_\_\_\_\_  
12. State ID# (if applicable): 1970450027

B. Customer Information ☐ same as above

P. O. Number: \_\_\_\_\_

1. Customer Name: MWH  
2. Billing Address: 29407 S. Route 53  
3. City, State and ZIP: Wilmington, IL, 60481  
4. Contact Name: Jared Schmidt  
5. Contact Email: jared.schmidt@mwhglobal.com  
6. Phone: 815-423-6841 FAX: 815-423-6848  
7. Transporter Name: \_\_\_\_\_  
8. Transporter ID # (if appl.): \_\_\_\_\_  
9. Transporter Address: \_\_\_\_\_  
10. City, State and ZIP: \_\_\_\_\_

C. Waste Stream Information

1. DESCRIPTION  
a. Common Waste Name: L23A Soil State Waste Code(s): \_\_\_\_\_  
b. Describe Process Generating Waste or Source of Contamination:  
Excavation of Site L23A soils.  
c. Typical Color(s): Brown  
d. Strong Odor? ☐ Yes ☒ No Describe: \_\_\_\_\_  
e. Physical State at 70°F: ☒ Solid ☐ Liquid ☐ Powder ☐ Semi-Solid or Sludge ☐ Other: \_\_\_\_\_  
f. Layers? ☒ Single layer ☐ Multi-layer ☐ NA  
g. Water Reactive? ☐ Yes ☒ No If Yes, Describe: \_\_\_\_\_  
h. Free Liquid Range (%): \_\_\_\_\_ to \_\_\_\_\_ ☒ NA(solid)  
i. pH Range: ☐ ≤2 ☒ 2.1-12.4 ☐ ≥12.5 ☐ NA(solid) Actual: \_\_\_\_\_  
j. Liquid Flash Point: ☐ < 140°F ☐ ≥ 140°F ☒ NA(solid) Actual: \_\_\_\_\_  
k. Flammable Solid: ☐ Yes ☒ No  
l. Physical Constituents: List all constituents of waste stream - (e.g. Soil 0-80%, Wood 0-20%): ☐ (See Attachment)

| Constituents (Total Composition Must be ≥ 100%) | Concentration % | Constituents (Total Composition Must be ≥ 100%) | Concentration % |
|---|-----------------|---|-----------------|
| 1. <u>Soil</u>                                  | <u>100%</u>     | 4. _____  | _____           |
| 2. _____  | _____           | 5. _____  | _____           |
| 3. _____  | _____           | 6. _____  | _____           |

2. ESTIMATED QUANTITY OF WASTE AND SHIPPING INFORMATION

a. ☒ Event ☐ Base/Ongoing (Check One)  
b. Estimated Annual Quantity: 3000 ☐ Tons ☒ Cubic Yards ☐ Drums ☐ Gallons ☐ Other (specify): \_\_\_\_\_  
c. Shipping Frequency: 175 Units per ☐ Month ☐ Quarter ☐ Year ☒ One Time ☐ Other  
d. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If yes, answer e.) ☐ Yes ☒ No  
e. USDOT Shipping Description (if applicable): \_\_\_\_\_

3. SAFETY REQUIREMENTS (Handling, PPE, etc.): None





## Generator's Nonhazardous Waste Profile Sheet

100703IL

### D. Regulatory Status (Please check appropriate responses)

1. Is this a USEPA (40 CFR Part 261)/State hazardous waste? If yes, contact your sales representative. ☐ Yes ☒ No
2. Is this waste included in one or more of categories below (Check all that apply)? If yes, attach supporting documentation. ☐ Yes ☒ No
  - ☐ Delisted Hazardous Waste ☐ Excluded Wastes Under 40 CFR 261.4
  - ☐ Treated Hazardous Waste Debris ☐ Treated Characteristic Hazardous Wastes
3. Is the waste from a Federal (40 CFR 300, Appendix B) or state mandated clean-up? If yes, see instructions. ☒ Yes ☐ No
4. Does the waste represented by this waste profile sheet contain radioactive material? ☐ Yes ☒ No
  - a. If yes, is disposal regulated by the Nuclear Regulatory Commission? ☐ Yes ☐ No
  - b. If yes, is disposal regulated by a State Agency for radioactive waste/NORM? ☐ Yes ☐ No
5. Does the waste represented by this waste profile sheet contain concentrations of regulated Polychlorinated Biphenyls (PCBs)? ☐ Yes ☒ No
  - a. If yes, is disposal regulated under TSCA? ☐ Yes ☐ No
6. Does the waste contain untreated, regulated, medical or infectious waste? ☐ Yes ☒ No
7. Does the waste contain asbestos? ☐ Yes ☒ No If Yes, ☐ Friable ☐ Non Friable
8. Is this profile for remediation waste from a facility that is a major source of Hazardous Air Pollutants (Site Remediation NESHAP, 40 CFR 63 subpart GGGGG)? ☐ Yes ☒ No  
If yes, does the waste contain <500 ppb VOHAPs at the point of determination? ☐ Yes ☐ No

### E. Generator Certification (Please read and certify by signature below)

By signing this Generator's Waste Profile Sheet, I hereby certify that all:

1. Information submitted in this profile and all attached documents contain true and accurate descriptions of the waste material;
2. Relevant information within the possession of the Generator regarding known or suspected hazards pertaining to this waste has been disclosed to WM/the Contractor;
3. Analytical data attached pertaining to the profiled waste was derived from testing a representative sample in accordance with 40 CFR 261.20(c) or equivalent rules; and
4. Changes that occur in the character of the waste (i.e. changes in the process or new analytical) will be identified by the Generator and disclosed to WM (and the Contractor if applicable) prior to providing the waste to WM (and the Contractor if applicable).
5. Check all that apply:

- ☒ Attached analytical pertains to the waste. Identify laboratory & sample ID #'s and parameters tested:

250474-1

# Pages: 48

- ☐ Only the analyses identified on the attachment pertain to the waste (identify by laboratory & sample ID #'s and parameters tested).  
Attachment #:

- ☒ Additional information necessary to characterize the profiled waste has been attached (other than analytical).

Indicate the number of attached pages: 2

- ☒ I am an agent signing on behalf of the Generator, and the delegation of authority to me from the Generator for this signature is available upon request.

- ☒ By Generator process knowledge, the following waste is not a listed waste and is below all TCLP regulatory limits.

Certification Signature: Mark M. Fruen

Title: Environmental Engineer / US Army Corps of Engineers

Company Name: US Army Corps of Engineers

Name (Print): Mark M. Fruen

Date: April 17, 2006

On the behalf of the US Dept. of Defense

### FOR WM USE ONLY

Management Method: ☒ Landfill ☐ Bioremediation

Approval Decision:

☒ Approved

☐ Not Approved

☐ Non-hazardous solidification ☐ Other: 25 Land Disposal

Waste Approval Expiration Date: 04-01-08

Management Facility Precautions, Special Handling Procedures or Limitation

on approval: Approved as special waste.

☐ Shall not contain free liquid

☐ Shipment must be scheduled into disposal facility

☐ Approval Number must accompany each shipment

☐ Waste Manifest must accompany load

WM Authorization Name / Title: Joseph Kosh - WAM

Date: 04-17-07

State Authorization (if Required):

Date:



# GENERATOR'S WASTE PROFILE SHEET

Profile Number: WMI \_\_\_\_\_

Service Agreement on File? ☒ YES ☐ NO

Profile History ☐ Renewal ☒ Initial

☒ Non-Hazardous ☐ Non-Special ☐ TSCA ☐ Hazardous

Renewal Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

## A. Waste Generator Information

1. Generator Name: U.S. Army Joliet Ammunition Plant 2. SIC Code: 3483  
 3. Facility Street Address: 29401 S. Rt. 53 4. Phone: (815) 423-5647  
 5. Facility City: Wilmington 6. State/Province: IL  
 7. Zip/Postal Code: 60481 8. Generator USEPA/Federal ID #: \_\_\_\_\_  
 9. County: Will 10. State/Province ID #: 1970450027  
 11. Customer Name: MWH 12. Customer Phone: (815) 423-6841  
 13. Customer Contact: Kurt Adams 14. Customer Fax: 815-423-6848  
 15. Billing Address N/A ☐ Same as above

## B. Waste Stream Information

### 1. Description

a. Name of Waste: Site M3 Soil  
 b. Process Generating waste: Excavation of Site M3

|                         |                               |  |   |  |
|-------------------------|-------------------------------|--|---|--|
| c. Color<br>brown/black | d. Strong odor<br>(describe): | e. Physical state @ 70°F<br><input checked="" type="checkbox"/> Solid <input type="checkbox"/> Liquid<br><input type="checkbox"/> Gas <input type="checkbox"/> Sludge<br><input type="checkbox"/> Other<br><input type="checkbox"/> Powder /Dust | f. Layers<br><input checked="" type="checkbox"/> Single Layer<br><input type="checkbox"/> Multi-layer | g. Free liquid range<br>to %<br><br>h. pH: Range<br>to 8.4 |
|-------------------------|-------------------------------|--|---|--|

i. Liquid Flash Point: ☐ <73°F ☐ 73-99°F ☐ 100-139°F ☐ 140-199°F ☒ ≥ 200°F ☐ Not applicable

j. Physical and Chemical Composition (List all constituents (including organics, debris, UHC's, and any incidental or periodic materials) present in any concentration and submit representative sample or analysis (where non-hazardous organic solvents are present, please explain source):

| Constituents                                  | Concentration Range | Constituents | Concentration Range |
|---|---------------------|--------------|---------------------|
| Soil  | 98%                 |              |                     |
| Debris (steel, wood, concrete, ceramic, etc.) | 2%                  |              |                     |
|   |                     |              |                     |

**TOTAL COMPOSITION MUST EQUAL OR EXCEED 100%**

k. ☐ Oxidizer ☐ Pyrophoric ☒ Explosive ☐ Radioactive  
☐ Carcinogen ☐ Infectious ☐ Shock Sensitive ☐ Water Reactive

l. Does the waste represented by this profile contain any of the carcinogens which require OSHA notification? (list in Section B.1.j) ☐ YES ☒ NO

m. Does the waste represented by this profile contain dioxins? (list in Section B.1.j) ☐ YES ☒ NO

n. Does the waste represented by this profile contain asbestos? ☐ YES ☒ NO  
 If yes, ☐ friable ☐ non-friable

o. Does the waste represented by this profile contain benzene subject to the waste operations NESHAP? ☐ YES ☒ NO

If yes, concentration \_\_\_\_\_ ppm

p. Is the waste subject to RCRA Subpart CC controls? (for hazardous waste only) ☐ YES ☒ NO

If yes, volatile organic concentration \_\_\_\_\_ ppmw

q. Does the waste contain any Class I or Class II ozone-depleting substances? ☐ YES ☒ NO

r. Does the waste contain debris? (list in Section B.1.j) ☒ YES ☐ NO

s. Are all containers included in this waste stream empty and as defined in 40 CFR 261.7 and/or 761.79 (If yes, please include MSDS for former contents) ☐ YES ☐ NO ☒ NA

### 2. Quantity of Waste

Estimate Annual Volume 14,000 ☐ Tons ☒ Yards ☐ Drums ☐ Other (specify) \_\_\_\_\_

### 3. Shipping Information

a. Packaging: ☒ Bulk Solid ☐ Bulk Liquid ☐ Drum ☐ Other \_\_\_\_\_ Type/Size: \_\_\_\_\_

b. Shipping Frequency: Units 700 Per: ☐ Month ☐ Quarter ☐ Year ☐ One time ☒ Other \_\_\_\_\_ Total \_\_\_\_\_

c. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If no, skip d, e, and f) ☐ YES ☒ NO

d. Reportable Quantity (lbs., kgs.): \_\_\_\_\_ e. Hazard Class/ID #: \_\_\_\_\_

f. USDOT Shipping Name: \_\_\_\_\_

g. Personal Protective Equipment Requirements: \_\_\_\_\_

h. Transporter/Transfer Station: \_\_\_\_\_



**C. Generator's Certification** (Please check appropriate responses, sign, and date below.)

1. Is this a USEPA hazardous waste (40 CFR Part 261)? If the answer is no, skip to 2. ☐ YES ☒ NO  
 a. If yes, identify ALL USEPA listed and characteristic waste code numbers (D, F, K, P, U) \_\_\_\_\_
- b. If a characteristic hazardous waste, do underlying hazardous constituents (UHCs) apply?..... ☐ YES ☐ NO  
 (if yes, list in Section B.1.j)
2. Does the waste represented by this waste profile sheet contain any of the following pesticides or herbicides: Endrin, Lindane, Methoxychlor, Toxaphene, 2,4,D, 2,4,5-TP (silvex), chlordane, Heptachlor (and its epoxide)? ☐ YES ☒ NO
3. Is the waste from a CERCLA (40 CFR 300, Appendix B) or state mandated clean-up?..... ☒ YES ☐ NO  
 If yes, attach Record of Decision (ROD), 104/106 or 122 order or court order that governs site clean-up activity. For state mandated clean-up, provide relevant documentation.
4. Does the waste represented by this waste profile sheet contain radioactive material, or is disposal regulated by the Nuclear Regulatory Commission?..... ☐ YES ☒ NO
5. Does the waste represented by this waste profile sheet contain concentrations of Polychlorinated Biphenyls (PCBs) regulated by 40 CFR 761? ( $\geq 50$  ppm or derived from a source  $\geq 50$  ppm) ..... ☐ YES ☒ NO  
 a. If present, is the concentration based on a dry weight analysis? ..... ☐ YES ☐ NO  
 b. If yes, were the PCBs imported into the U.S.? ..... ☐ YES ☐ NO
6. Is the waste represented by this waste profile sheet a de-listed or de-characterized hazardous waste, subject to LDR requirements under IL TI 35 728.107?..... ☐ YES ☒ NO
7. Is the waste represented by this waste profile sheet Subject to the Illinois Solid Waste Management Act fee?..... ☐ YES ☒ NO  
 If no, explain.
8. Does the waste profile sheet and all attachments contain true and accurate descriptions of the waste material, and has all relevant information within the possession of the Generator regarding known or suspected hazards pertaining to the waste been disclosed to the Contractor?..... ☒ YES ☐ NO
9. Will all changes which occur in the character of the waste be identified by the Generator and disclosed to the Contractor prior to providing the waste to the Contractor?..... ☒ YES ☐ NO
10. By checking "yes", I certify my waste is not an Illinois Special Waste, and that I understand that a person who knowingly and falsely certifies that a waste is not special waste is subject to the penalties set forth in subdivision (6) of subsection (h) of section 44 of the Illinois Pollution Control Act. .... ☐ YES ☒ NO
11. How has the generator determined the waste is not a RCRA hazardous waste? ☒ Analysis ☐ MSDS ☐ Other (explain)

☒ Check here if a Certificate of Destruction or Disposal is required.

Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. I authorize WMI to obtain a sample from any waste shipment for purposes of recertification. If this certification is made by a broker, contractor, or consultant, the undersigned signs as authorized agent of the generator and has confirmed the information contained in this Profile Sheet from information provided by the generator and additional information as it has determined to be reasonably necessary. If approved for management, Contractor has all the necessary permits and licenses for the waste that has been characterized and identified by this approved profile.

Certification Signature: Mark M. Frueh Title: Environmental Engineer  
 Name (Type or Print): Mark M. Frueh Company Name: U.S. Army Corp of Engineers Date: 8/1/06  
☒ Check if additional information is attached. Indicate the number of attached pages 48

**D. WMI Management's Decision****FOR WMI USE ONLY**

1. Management Method ☐ Landfill ☐ Non-hazardous Solidification ☐ Bioremediation ☐ Incineration  
☐ Hazardous Stabilization ☐ Other (Specify) \_\_\_\_\_
2. Proposed Ultimate Management Facility: \_\_\_\_\_
3. Precautions, Special Handling Procedures, or Limitation on Approval: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
4. Waste Form \_\_\_\_\_ 5. Source \_\_\_\_\_ 6. System Type ☐ Approved ☐ Disapproved  
 Special Waste decision: \_\_\_\_\_  
 Salesperson's Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
 Division Approval Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
 Special Waste Approvals Person Signature: \_\_\_\_\_ Date: \_\_\_\_\_





## WASTE MANAGEMENT

Special Waste Group  
1411 Opus Place, Suite 400  
Downers Grove, IL 60515  
630-724-8476

Dear Generator,

WPS # \_\_\_\_\_

Your waste has been found to contain reactive sulfide and/or cyanide in concentrations greater than 10 PPM, but less than 500 PPM for reactive sulfide and/or less than 250 PPM for reactive cyanide. The Illinois EPA has indicated that additional information concerning this waste stream will be required prior to landfill approval. Specifically:

Has the waste ever caused injury to a worker because of H<sub>2</sub>S or HCN generation?

Yes

☒ No

Have the OSHA workplace air concentration limits for either H<sub>2</sub>S or HCN been exceeded in areas where the waste is generated, stored, or otherwise handled?

Yes

☒ No

Have air concentrations of H<sub>2</sub>S or HCN above 10 PPM ever been encountered in areas where the waste is generated, stored, or otherwise handled?

Yes

☒ No

Have any of the problems described above ever been encountered with disposal of this waste? (i.e. land disposal, treatment, etc.)

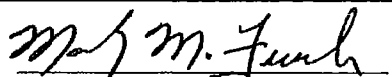
Yes

☒ No

If you indicated a positive response to any of the above questions, please explain below:

Sincerely,

Joseph Kash,  
Regional Compliance Manager

  
(Generator's Signature)  
US Army Corps of Engineers  
Environmental Engineer  
(Title)  
Aug. 1, 2006  
(Date)



#### b. Transfer Transfer Station:



Profile Number: **WMI PB1737**

**C. Generator's Certification** (40 CFR Part 261.17) If the answer is no, stop in 2.

1. Is this a USEPA hazardous waste (40 CFR Part 261.17)? If the answer is no, stop in 2.
  - a. If yes, identify ALL USEPA listed characteristic waste codes and numbers (D, F, K, P, U) \_\_\_\_\_
  - b. If a characteristic hazardous waste, do underlying hazardous constituents (PCHCs) apply?
    1. If yes, list in Section B.1.1.1
2. Does the waste represented by this waste profile sheet contain any of the following pesticides or herbicides: Endrin, Lindane, Methoxychlor, Toxaphene, 2,4-D, 2,4,5-TP (Silvex), chlordane, Heptachlor (and its epoxide)?
 

☐ YES ☒ NO
3. Is the waste from CERCLA (40 CFR 301, Appendix B) or state control (except)?
 

☒ YES ☐ NO
4. If yes, attach Record of Decision (ROD), 104126 or 122 order or court order that governs site clean-up activity. For state mandated clean-up, provide relevant documentation.
5. Does the waste represented by this waste profile sheet contain radioactive material, or is disposed regulated by the Nuclear Regulatory Commission?
 

☐ YES ☒ NO
6. Does the waste represented by this waste profile sheet contain concentrations of Polychlorinated Biphenyls (PCBs) regulated by 40 CFR 761.7 (a) (3) ppm or derivative of more than 50 ppm?
  - a. If present, is the concentration based on a dry weight analysis?
 

☐ YES ☒ NO
  - b. If yes, were the PCBs imported into the U.S.?
 

☐ YES ☒ NO
7. Is the waste represented by this waste profile sheet subject to the Illinois Solid Waste Management Act?
 

☐ YES ☒ NO
8. Does the waste profile sheet and all attachments contain true and accurate descriptions of the waste material, and has all relevant information within the possession of the Generator regarding known or suspected hazards pertaining to the waste been disclosed to the Contractor?
 

☒ YES ☐ NO
9. Will all changes which occur in the character of the waste be identified by the Generator and disclosed to the Contractor prior to providing the waste to the Contractor?
 

☒ YES ☐ NO
10. By checking "yes", I certify my waste is all in Illinois Special Waste, and that I understand this is a person who knowingly and intentionally that a waste is not special waste is subject to the penalties set forth in subsection (b) of section 46 of the Illinois Pollution Control Act.
 

☐ YES ☒ NO
11. How has the generator determined the waste is not a RCRA hazardous waste?
 

☒ Analysis  
☐ MSDS  
☐ Other (explain) \_\_\_\_\_

☒ Check here if a Certificate of Destruction or Disposal is required.

Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. I authorize WMI to obtain a sample from any waste shipment for purposes of reclassification. If this certification is made by a broker, contractor, or consultant, the undersigned signs as authorized agent of the generator and has confirmed the information received in this Profile Sheet from information provided by the generator and additional information as it has determined to be reasonably necessary. If approved for management, Contractor has all the necessary permits and licenses for the waste that has been characterized and identified by this approved profile.

Certification Signature: Mark M. Funch Title: Environmental Engineer  
 Name (Type or Print): Mark M. Funch Company Name: U.S. Army Corp of Engineers Date: Dec. 17, 2006  
☒ Check if additional information is attached. Indicate the number of attached pages: 45

| E. WMI Management's Decision   |  | FOR WMI USE ONLY   |  |
|--|--|--|--|
| 1. Management Method: <input checked="" type="checkbox"/> Landfill <input type="checkbox"/> Non-hazardous Solidification <input type="checkbox"/> Bioremediation <input type="checkbox"/> Incineration<br><input type="checkbox"/> Hazardous Stabilization <input type="checkbox"/> Other (Specify) <u>25 Redisposal</u> |  |  |  |
| 2. Proposed Ultimate Management Facility: <u>Redisposal</u>  |  |  |  |
| 3. Justification, Special Handling Procedures, or Limitation on Approval:<br><u>Approved as special waste.</u>   |  |  |  |
| 4. Waste Form: _____   |  | 5. Source: _____   |  |
| Special Waste Division Signature: <u>John R. [Signature]</u>   |  | 6. Status Type: <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Disapproved<br>Date: <u>12/27/06</u> |  |
| Division Approval Signature: _____   |  | Date: _____  |  |
| Special Waste Approval Person Signature: <u>Joseph Kosh</u>  |  | Date: <u>12-27-06</u>  |  |



# GENERATOR'S WASTE PROFILE SHEET

Profile Number: WMI

Service Agreement on File? ☐ YES ☐ NO

Profile History ☐ Renewal ☒ Initial

☒ Non-Hazardous ☐ Non-Special ☐ TSCA ☐ Hazardous

Renewal Date: / /

## A. Waste Generator Information

|   |  |
|---|--|
| 1. Generator Name: <u>U.S. Army Joliet Ammunition Plant</u> | 2. SIC Code: <u>3483</u>                   |
| 3. Facility Street Address: <u>29401 S. Rt. 53</u>          | 4. Phone: <u>(815) 423-5647</u>            |
| 5. Facility City: <u>Wilmington</u>                         | 6. State/Province: <u>IL</u>               |
| 7. Zip/Postal Code: <u>60481</u>                            | 8. Generator USEPA/Federal ID #: _____     |
| 9. County: <u>Will</u>                                      | 10. State/Province ID #: <u>1970450027</u> |
| 11. Customer Name: <u>MWH</u>                               | 12. Customer Phone: <u>(815) 423-6841</u>  |
| 13. Customer Contact: <u>Kurt Adams</u>                     | 14. Customer Fax: <u>815-423-6848</u>      |
| 15. Billing Address: <u>N/A</u>                             | <input type="checkbox"/> Same as above     |

## B. Waste Stream Information

### 1. Description

a. Name of Waste: M12 Soil

b. Process Generating waste: Excavation of Pb contaminated soil from Site M12, JOAAP

|                          |  |  |   |  |
|--------------------------|--|--|---|--|
| c. Color<br><u>Brown</u> | d. Strong odor<br>(describe):<br><u>None</u> | e. Physical state @ 70°F<br><input checked="" type="checkbox"/> Solid <input type="checkbox"/> Liquid<br><input type="checkbox"/> Gas <input type="checkbox"/> Sludge<br><input type="checkbox"/> Other<br><input type="checkbox"/> Powder /Dust | f. Layers<br><input checked="" type="checkbox"/> Single Layer<br><input type="checkbox"/> Multi-layer | g. Free liquid range<br>to %<br><br>h. pH: Range<br>to 7.4 |
|--------------------------|--|--|---|--|

i. Liquid Flash Point: ☐ <73°F ☐ 73-99°F ☐ 100-139°F ☐ 140-199°F ☒ ≥ 200°F ☐ Not applicable

j. Physical and Chemical Composition (List all constituents (including organics, debris, UHC's, and any incidental or periodic materials) present in any concentration and submit representative sample or analysis (where non-hazardous organic solvents are present, please explain source):

| Constituents | Concentration Range | Constituents | Concentration Range |
|--------------|---------------------|--------------|---------------------|
| Soil         | 100%                |              |                     |
|              |                     |              |                     |
|              |                     |              |                     |

**TOTAL COMPOSITION MUST EQUAL OR EXCEED 100%**

k. ☐ Oxidizer ☐ Pyrophoric ☐ Explosive ☐ Radioactive  
☐ Carcinogen ☐ Infectious ☐ Shock Sensitive ☐ Water Reactive

l. Does the waste represented by this profile contain any of the carcinogens which require OSHA notification? (list in Section B.1.j) ☐ YES ☒ NO

m. Does the waste represented by this profile contain dioxins? (list in Section B.1.j) ☐ YES ☒ NO

n. Does the waste represented by this profile contain asbestos? ☐ YES ☒ NO  
If yes, ☐ friable ☐ non-friable

o. Does the waste represented by this profile contain benzene subject to the waste operations NESHAP? ☐ YES ☒ NO  
If yes, concentration \_\_\_\_\_ ppm

p. Is the waste subject to RCRA Subpart CC controls? (for hazardous waste only) ☐ YES ☒ NO  
If yes, volatile organic concentration \_\_\_\_\_ ppmw

q. Does the waste contain any Class I or Class II ozone-depleting substances? ☐ YES ☒ NO

r. Does the waste contain debris? (list in Section B.1.j) ☐ YES ☒ NO

s. Are all containers included in this waste stream empty and as defined in 40 CFR 261.7 and/or 761.79 (If yes, please include MSDS for former contents) ☐ YES ☐ NO ☒ NA

### 2. Quantity of Waste

Estimate Annual Volume 8500 ☐ Tons ☒ Yards ☐ Drums ☐ Other (specify) \_\_\_\_\_

### 3. Shipping Information

a. Packaging: ☒ Bulk Solid ☐ Bulk Liquid ☐ Drum ☐ Other \_\_\_\_\_ Type/Size: \_\_\_\_\_

b. Shipping Frequency: Units 425 Per: ☐ Month ☐ Quarter ☐ Year ☒ One time ☐ Other \_\_\_\_\_

c. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If no, skip d, e, and f) ☐ YES ☒ NO

d. Reportable Quantity (lbs.; kgs.): \_\_\_\_\_ e. Hazard Class/ID #: \_\_\_\_\_

f. USDOT Shipping Name: \_\_\_\_\_

g. Personal Protective Equipment Requirements: \_\_\_\_\_

h. Transporter/Transfer Station: \_\_\_\_\_



**C. Generator's Certification** (Please check appropriate responses, sign, and date below.)

1. Is this a USEPA hazardous waste (40 CFR Part 261)? If the answer is no, skip to 2. ☐ YES ☒ NO  
 a. If yes, identify ALL USEPA listed and characteristic waste code numbers (D, F, K, P, U) \_\_\_\_\_
- b. If a characteristic hazardous waste, do underlying hazardous constituents (UHCs) apply? ☐ YES ☐ NO  
 (if yes, list in Section B.1.j)
2. Does the waste represented by this waste profile sheet contain any of the following pesticides or herbicides: Endrin, Lindane, Methoxychlor, Toxaphene, 2,4,D, 2,4,5-TP (silvex), chlordane, Heptachlor (and its epoxide)? ☐ YES ☒ NO
3. Is the waste from a CERCLA (40 CFR 300, Appendix B) or state mandated clean-up? ☒ YES ☐ NO  
 If yes, attach Record of Decision (ROD), 104/106 or 122 order or court order that governs site clean-up activity. For state mandated clean-up, provide relevant documentation.
4. Does the waste represented by this waste profile sheet contain radioactive material, or is disposal regulated by the Nuclear Regulatory Commission? ☐ YES ☒ NO
5. Does the waste represented by this waste profile sheet contain concentrations of Polychlorinated Biphenyls (PCBs) regulated by 40 CFR 761? ( $\geq 50$  ppm or derived from a source  $\geq 50$  ppm) ☐ YES ☒ NO  
 a. If present, is the concentration based on a dry weight analysis? ☐ YES ☐ NO  
 b. If yes, were the PCBs imported into the U.S.? ☐ YES ☐ NO
6. Is the waste represented by this waste profile sheet a de-listed or de-characterized hazardous waste, subject to LDR requirements under IL TI 35 728.107? ☐ YES ☒ NO
7. Is the waste represented by this waste profile sheet Subject to the Illinois Solid Waste Management Act fee? ☐ YES ☒ NO  
 If no, explain.
8. Does the waste profile sheet and all attachments contain true and accurate descriptions of the waste material, and has all relevant information within the possession of the Generator regarding known or suspected hazards pertaining to the waste been disclosed to the Contractor? ☒ YES ☐ NO
9. Will all changes which occur in the character of the waste be identified by the Generator and disclosed to the Contractor prior to providing the waste to the Contractor? ☒ YES ☐ NO
10. By checking "yes", I certify my waste is not an Illinois Special Waste, and that I understand that a person who knowingly and falsely certifies that a waste is not special waste is subject to the penalties set forth in subdivision (6) of subsection (h) of section 44 of the Illinois Pollution Control Act. ☐ YES ☒ NO
11. How has the generator determined the waste is not a RCRA hazardous waste? ☒ Analysis  
☐ MSDS  
☐ Other  
(explain)

☒ Check here if a Certificate of Destruction or Disposal is required.

Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. I authorize WMI to obtain a sample from any waste shipment for purposes of recertification. If this certification is made by a broker, contractor, or consultant, the undersigned signs as authorized agent of the generator and has confirmed the information contained in this Profile Sheet from information provided by the generator and additional information as it has determined to be reasonably necessary. If approved for management, Contractor has all the necessary permits and licenses for the waste that has been characterized and identified by this approved profile.

Certification Signature: \_\_\_\_\_

Title: Environmental Engineer

Name (Type or Print): \_\_\_\_\_

Mark M. Frueh

Company Name: \_\_\_\_\_

U.S. Army Corp of Engineers

Date: \_\_\_\_\_

Nov. 28, 2006

☒ Check if additional information is attached. Indicate the number of attached pages \_\_\_\_\_

**D. WMI Management's Decision****FOR WMI USE ONLY**

1. Management Method ☐ Landfill ☐ Non-hazardous Solidification ☐ Bioremediation ☐ Incineration  
☐ Hazardous Stabilization ☐ Other (Specify) \_\_\_\_\_
2. Proposed Ultimate Management Facility: \_\_\_\_\_
3. Precautions, Special Handling Procedures, or Limitation on Approval: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
4. Waste Form \_\_\_\_\_ 5. Source \_\_\_\_\_ 6. System Type \_\_\_\_\_  
 Special Waste decision: ☐ Approved ☐ Disapproved  
 Salesperson's Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
 Division Approval Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
 Special Waste Approvals Person Signature: \_\_\_\_\_ Date: \_\_\_\_\_





## WASTE MANAGEMENT

Special Waste Group  
1411 Opus Place, Suite 400  
Downers Grove, IL 60515  
630-724-8476

Dear Generator,

WPS # \_\_\_\_\_

Your waste has been found to contain reactive sulfide and/or cyanide in concentrations greater than 10 PPM, but less than 500 PPM for reactive sulfide and/or less than 250 PPM for reactive cyanide. The Illinois EPA has indicated that additional information concerning this waste stream will be required prior to landfill approval. Specifically:

Has the waste ever caused injury to a worker because of H<sub>2</sub>S or HCN generation?

Yes

No

Have the OSHA workplace air concentration limits for either H<sub>2</sub>S or HCN been exceeded in areas where the waste is generated, stored, or otherwise handled?

Yes

No

Have air concentrations of H<sub>2</sub>S or HCN above 10 PPM ever been encountered in areas where the waste is generated, stored, or otherwise handled?

Yes

No

Have any of the problems described above ever been encountered with disposal of this waste? (i.e. land disposal, treatment, etc.)

Yes

No

If you indicated a positive response to any of the above questions, please explain below:

---

---

---

Sincerely,

Joseph Kash,  
Regional Compliance Manager

M. J. M. Fink  
(Generator's Signature)  
US Army Corps of Engineers  
Environmental Engineer  
(Title)  
Nov. 28, 2006  
(Date)



## **APPENDIX C**

### **ENSYS® TEST KIT AND XRF UNIT RESULTS**



**Legend:**

|       |  |
|-------|--|
| ABS   | absorbance                                 |
| Col   | column                                     |
| Conc  | concentration                              |
| Dk.   | dark                                       |
| DNT   | dinitrotoluene                             |
| ID    | identification                             |
| Lt.   | light                                      |
| Med.  | medium                                     |
| mg/kg | milligrams per kilogram                    |
| mg/L  | milligrams per liter                       |
| N/A   | not applicable                             |
| Pb    | lead                                       |
| ppm   | parts per million                          |
| STL   | Severn Trent Laboratories, Inc.            |
| TCLP  | toxicity characteristic leaching procedure |
| TNT   | trinitrotoluene                            |
| XRF   | x-ray fluorescence                         |

**General Note:**

The sample was sent to STL for analysis if the STL column is checked. The sample was not sent to STL for analysis if the STL column was not checked. If "fail" is written in the "STL" or "TNT or DNT" columns, the Ensysis<sup>®</sup> test kit or XRF unit result exceeded the screening criteria and the sample was not sent to STL for analysis.



Date 11/17/06Background G.001Control 0.315

|       | 1             | 2                      | 3                     | 4                          | 5                                       | 6                              | 7                  | 8                                | 9             |                |                             |     |
|-------|---------------|------------------------|-----------------------|----------------------------|---|--------------------------------|--------------------|----------------------------------|---------------|----------------|-----------------------------|-----|
| color | Sample ID     | ABS <sub>initial</sub> | ABS <sub>sample</sub> | ABS <sub>initial</sub> * 4 | ABS <sub>final</sub><br>(Col 3 - Col 4) | TNT CONC ppm<br>(Col 5/0.0323) | Dilution<br>Factor | Result<br>(ppm)<br>Col 6 * Col 7 | TNT or<br>DNT | sample<br>time | XRF - Pb<br>result<br>(ppm) | STL |
| clear | JPL2-CP-1 (1) | .013                   | .060                  | .052                       | .008                                    | .247                           | 1.67               | .4136                            | —             | 6900           | 38                          |     |
| clear | 2 (1)         | .008                   | .023                  | .032                       | -.009                                   | -.278                          | 1.25               | -.348                            | —             | 905            | 26                          |     |
| clear | 3 (1)         | .012                   | .026                  | .048                       | -.022                                   | -.681                          | 1.25               | -.851                            | —             | 910            | 25                          |     |
| clear | 4 (1)         | .012                   | .020                  | .048                       | -.028                                   | -.866                          | 1.25               | -1.08                            | —             | 915            | 35                          |     |
| clear | 5 (1)         | .04                    | .007                  | .044                       | -.027                                   | -.835                          | 1.25               | -1.044                           | —             | 920            | 22                          |     |
| clear | 6 (1)         | .008                   | .013                  | .032                       | -.019                                   | -.588                          | 1.25               | -.735                            | —             | 928            | 27                          |     |
| clear | 7 (1)         | .010                   | .019                  | .040                       | -.021                                   | -.650                          | 1.25               | -.812                            | —             | 930            | 32                          |     |
| clear | 8 (1)         | .014                   | .018                  | .056                       | -.036                                   | -1.176                         | 1.67               | -1.96                            | —             | 935            | 37                          |     |
| clear | 9 (1)         | .008                   | .011                  | .032                       | -.021                                   | -.650                          | 1.25               | -.8125                           | —             | 940            | 24                          |     |
| RED   | 10 (1)        | .007                   | 3.34                  | .028                       | 3.286                                   | 101.73                         | 1.67               | 169.89                           |               | 945            | 40                          |     |
| clear | 11 (1)        | .010                   | .025                  | .040                       | -.015                                   | -.464                          | 1.67               | -.775                            | —             | 950            | 35                          |     |
| clear | 12 (1)        | .008                   | .013                  | .032                       | -.019                                   | -.588                          | 1.25               | -.735                            | —             | 965            | 28                          |     |
| Y/blk | 13 (1)        | .029                   | .134                  | .116                       | .018                                    | .557                           | 1.67               | 100.930                          | —             | 1000           | 60                          |     |
| clear | 14 (1)        | .011                   | .011                  | .044                       | -.033                                   | -1.021                         | 1.25               | 1.27                             | —             | 1005           | 37                          |     |
| clear | 15 (1)        | -.002                  | .009                  | .008                       | .017                                    | .526                           | 1.25               | .657                             | —             | 1010           | 23                          |     |
| clear | 16 (1)        | .003                   | .015                  | .012                       | .003                                    | .092                           | 1.67               | .155                             | —             | 1015           | 30                          |     |
| clear | 17 (1)        | .009                   | .031                  | .036                       | -.005                                   | -.154                          | 1.25               | -.193                            | —             | 1020           | 26                          |     |
| clear | 18 (1)        | -.002                  | .007                  | .008                       | .015                                    | .464                           | 1.25               | .580                             | —             | 1025           | <19                         |     |
| clear | 19 (1)        | -.002                  | .006                  | -.006                      | .014                                    | .433                           | 1.25               | .541                             | —             | 1030           | 22                          |     |
| clear | 20 (1)        | .003                   | .013                  | .012                       | .001                                    | .0309                          | 1.25               | .0386                            | —             | 1035           | 52                          |     |



Date 11/20/06

Background .060

Control 0.328

|         | 1             | 2                      | 3                     | 4                          | 5                                       | 6                              | 7                  | 8                                | 9             |                |     |     |
|---------|---------------|------------------------|-----------------------|----------------------------|---|--------------------------------|--------------------|----------------------------------|---------------|----------------|-----|-----|
| color   | Sample ID     | ABS <sub>initial</sub> | ABS <sub>sample</sub> | ABS <sub>initial</sub> * 4 | ABS <sub>final</sub><br>(Col 3 - Col 4) | TNT CONC ppm<br>(Col 5/0.0323) | Dilution<br>Factor | Result<br>(ppm)<br>Col 6 * Col 7 | TNT or<br>DNT | sample<br>time | STL | XRF |
|         | JPL2-CP 21(C) | -.002                  | .010                  | -.008                      | .018                                    | .557                           | 1.25               | .696                             | -             | 1040           |     | 34  |
|         | 22(C)         | .013                   | .038                  | .052                       | .014                                    | .433                           | 1.25               | .541                             | -             | 1045           |     | 50  |
|         | 23(C)         | .004                   | .017                  | .016                       | .001                                    | .0309                          | 1.25               | .038                             | -             | 1050           |     | 42  |
|         | 24(C)         | -.002                  | .001                  | -.008                      | .009                                    | .228                           | 1.25               | .348                             | -             | 1058           |     | 28  |
|         | 25(C)         | .016                   | .049                  | .064                       | -.015                                   | -.464                          | 1.67               | -.775                            | -             | 1100           |     | 86  |
| LF PINK | 26(C)         | .028                   | .121                  | .112                       | .009                                    | .278                           | 1.25               | .348                             | -             | 1105           | ✓   | 150 |
| LF PINK | 27            | .009                   | .185                  | .036                       | .149                                    | 4.61                           | 1.25               | 5.76                             | -             | 1110           |     |     |
|         | 28            | .013                   | .032                  | .052                       | -.02                                    | -.619                          | 1.25               | -.723                            | -             | 1115           | ✓   |     |
|         | 29            | .015                   | .038                  | .06                        | -.022                                   | -.681                          | 1.25               | -.851                            | -             | 1120           |     |     |
|         | 30            | .021                   | .033                  | .044                       | -.011                                   | -.0117                         | 1.25               | -.046                            | -             | 1125           |     |     |
|         | 31            | .024                   |                       |                            |   |                                | -                  |                                  |               | 1130           | ✓   |     |
| RED     | 32            | .064                   | 3.451                 | .256                       | 3.195                                   | 98.9                           | 2.5                | 247.29                           | TNT           | 1135           |     |     |
| LF PINK | 33            | .023                   | .114                  | .092                       | .022                                    | .681                           | 1.25               | .851                             | -             | 1140           |     |     |
| PINK    | 34            | .022                   | .229                  | .088                       | .141                                    | 4.365                          | 1.25               | 5.45                             | -             | 1145           |     |     |
| LF PINK | 35            | .018                   | .084                  | .072                       | .012                                    | -.3715                         | 1.25               | .464                             | -             | 1150           |     |     |
|         | 36            | .051                   | 3.87                  | .216                       | 3.341                                   | 103.4                          | 10                 | 1034.3                           | TNT           | 1155           | -   | -   |
|         | 37            |                        |                       |                            |   |                                | -                  |                                  |               | 1200           | ✓   | <19 |
|         | 38            |                        |                       |                            |   |                                | -                  |                                  |               | 1205           | ✓   |     |
|         | 39            |                        |                       |                            |   |                                | -                  |                                  |               | 1210           | ✓   |     |
|         | 40            | .061                   | 3.106                 | .244                       | 2.882                                   | 89.22                          | 2.5                | 223.06                           | TNT           | 1215           |     | -   |



Control . 32B

XRF

[illegible]



Control 0.325

[illegible]



Date 2/14/07Background 0.001Control 0.320

|       | 1           | 2                      | 3                     | 4                          | 5                                       | 6                              | 7                  | 8                                | 9             |                |                             |     |
|-------|-------------|------------------------|-----------------------|----------------------------|---|--------------------------------|--------------------|----------------------------------|---------------|----------------|-----------------------------|-----|
| color | Sample ID   | ABS <sub>initial</sub> | ABS <sub>sample</sub> | ABS <sub>initial</sub> * 4 | ABS <sub>final</sub><br>(Col 3 - Col 4) | TNT CONC ppm<br>(Col 5/0.0323) | Dilution<br>Factor | Result<br>(ppm)<br>Col 6 * Col 7 | TNT or<br>DNT | sample<br>time | XRF - Pb<br>result<br>(ppm) | STL |
|       | PL2- AF5(4) | .004                   | .007                  | .014                       | -.001                                   | -.278                          | 1.25               | -.348                            | -             | 0800           |                             |     |
|       | AF6(4)      | .011                   | .011                  | .044                       | -.033                                   | -1.021                         | 1.25               | -1.277                           | -             | 0805           |                             |     |
|       | AF7(4)      | .004                   | .008                  | .024                       | -.016                                   | -.495                          | 1.25               | -.619                            | -             | 0810           |                             |     |
|       | AF8(4)      | .004                   | .011                  | .044                       | -.013                                   | -.402                          | 1.25               | -.503                            | -             | 0815           |                             |     |
|       | AF9(4)      | .007                   | .013                  | .028                       | -.015                                   | -.461                          | 1.25               | -.580                            | -             | 0820           |                             |     |
|       | AF10(4)     | .009                   | .018                  | .036                       | -.018                                   | -.557                          | 1.25               | -.696                            | -             | 0825           |                             |     |
|       | AF11(4)     | .016                   | .021                  | .064                       | -.043                                   | -1.331                         | 1.25               | -1.664                           | -             | 0830           |                             |     |
|       | AF12(4)     | .003                   | .008                  | .012                       | -.004                                   | -.123                          | 1.25               | 0.154                            | -             | 0835           |                             |     |
|       | AF13(4)     | .006                   | .015                  | .024                       | -.007                                   | -.278                          | 1.25               | -.348                            | -             | 0840           |                             |     |
|       | AP4(2)      | 0.00                   | .004                  | 0                          | -.004                                   | .123                           | 1.25               | .154                             | -             | 0845           |                             |     |
|       | AP5(2)      | .002                   | .004                  | .008                       | -.004                                   | -.123                          | 1.25               | -.154                            | -             | 0850           |                             |     |
|       | AP6(2)      | .004                   | .004                  | .016                       | -.012                                   | -.371                          | 1.25               | -.464                            | -             | 0855           |                             |     |
|       | AP7(2)      | .007                   | .010                  | .028                       | -.018                                   | -.557                          | 1.25               | -.626                            | -             | 0900           |                             |     |
|       | AP8(1)      | 0.010                  | .015                  | .040                       | -.25                                    | -.773                          | 1.25               | -.967                            | -             | 1100           |                             |     |
|       | AP9(1)      | .013                   | .022                  | .082                       | -.030                                   | -.928                          | 1.25               | -1.160                           | -             | 1105           |                             |     |
|       | AP10(1)     | .017                   | .023                  | .066                       | -.045                                   | -1.393                         | 1.25               | -1.74                            | -             | 1110           |                             |     |
|       | AP11(1)     | .015                   | .017                  | .060                       | -.041                                   | -1.265                         | 1.25               | -1.58                            | -             | 1115           |                             |     |
|       | AP12(3)     | .014                   | .016                  | .056                       | -.040                                   | -1.238                         | 1.25               | -1.547                           | -             | 1120           |                             |     |
|       | AP13(3)     | .017                   | .025                  | .088                       | -.043                                   | -1.331                         | 1.25               | -1.664                           | -             | 1125           |                             |     |
|       | AP14(3)     | .016                   | .017                  | .064                       | -.047                                   | -1.455                         | 1.25               | -1.818                           | -             | 1130           |                             |     |







Date 2/15/07Background 0.001Control 0.0328

|       | 1               | 2                      | 3                     | 4                          | 5                                       | 6                              | 7                  | 8                                | 9             |                |                             |     |
|-------|-----------------|------------------------|-----------------------|----------------------------|---|--------------------------------|--------------------|----------------------------------|---------------|----------------|-----------------------------|-----|
| color | Sample ID       | ABS <sub>initial</sub> | ABS <sub>sample</sub> | ABS <sub>initial</sub> * 4 | ABS <sub>final</sub><br>(Col 3 - Col 4) | TNT CONC ppm<br>(Col 5/0.0323) | Dilution<br>Factor | Result<br>(ppm)<br>Col 6 * Col 7 | TNT or<br>DNT | sample<br>time | XRF - Pb<br>result<br>(ppm) | STL |
| CLEAR | JPL2 - AF14 (8) | .015                   | .019                  | .06                        | -.041                                   | -1.269                         | 1.25               | -1.586                           | —             | 1300           |                             |     |
|       | AF15 (8)        | .025                   | .032                  | .01                        | -.068                                   | -2.10                          | 1.25               | -2.631                           | —             | 1305           |                             |     |
|       | AF16 (8)        | .022                   | .029                  | .088                       | -.059                                   | -1.826                         | 1.25               | -2.28                            | —             | 1310           |                             |     |
|       | AF17 (8)        | .022                   | .027                  | .088                       | -.061                                   | -1.888                         | 1.25               | -2.36                            | —             | 1315           |                             |     |
|       | AF18 (8)        | .021                   | .027                  | .084                       | -.057                                   | -1.764                         | 1.25               | -2.20                            | —             | 1320           |                             |     |
|       | AP15 (6)        | .007                   | .011                  | .028                       | -.07                                    | -.526                          | 1.67               | -.878                            | —             | 1325           |                             |     |
|       | AP16 (6)        | .012                   | .012                  | .048                       | -.036                                   | -1.114                         | 1.25               | -1.393                           | —             | 1330           |                             |     |
|       | AP17 (6)        | .015                   | .016                  | .060                       | -.044                                   | -1.362                         | 1.25               | -1.702                           | —             | 1335           |                             |     |
|       | AP18 (6)        | .013                   | .017                  | .052                       | -.035                                   | -1.083                         | 1.25               | -1.354                           | —             | 1340           |                             |     |
|       | AP19 (6)        | .016                   | .021                  | .064                       | -.043                                   | -1.331                         | 1.25               | -1.664                           | —             | 1345           |                             |     |
|       | AP20 (6)        | .014                   | .017                  | .056                       | -.039                                   | -1.207                         | 1.25               | -1.509                           | —             | 1350           |                             |     |
| V     | AP21 (6)        | .017                   | .025                  | .068                       | -.043                                   | -1.331                         | 1.25               | -1.664                           | —             | 1355           |                             |     |
| CLEAR | JPL2 - AF19 (2) | .003                   | .006                  | .012                       | -.006                                   | -.185                          | 1.25               | -.232                            | —             | 1400           |                             |     |
| CLEAR | AF20 (2)        | .010                   | .013                  | .040                       | -.027                                   | -.835                          | 1.25               | -1.044                           | —             | 1405           |                             |     |
| CLEAR | AF21 (2)        | .015                   | .023                  | .060                       | -.028                                   | -.866                          | 1.25               | -1.08                            | —             | 1410           |                             |     |
| CLEAR | AF22 (2)        | .014                   | .019                  | .056                       | -.037                                   | -1.145                         | 1.25               | -1.43                            | —             | 1415           |                             |     |
| CLEAR | AP22 (1)        | .010                   | .016                  | .040                       | -.024                                   | -.743                          | 1.25               | -.928                            | —             | 1420           |                             |     |
|       | AP23 (1)        | .016                   | .017                  | .064                       | -.047                                   | -1.455                         | 1.25               | -1.818                           | —             | 1425           |                             |     |
|       | AP24 (1)        | .015                   | .017                  | .060                       | -.043                                   | -1.331                         | 1.25               | -1.664                           | —             | 1430           |                             |     |
|       | AP25 (1)        | .017                   | .023                  | .068                       | -.045                                   | -1.393                         | 1.25               | -1.741                           | —             | 1435           |                             |     |







Control<sup>N</sup>: 321

[illegible]



Control 1[illegible]



Date 2/21/07Background 0.001Control 0.325

|           | 1              | 2                      | 3                     | 4                          | 5                                       | 6                              | 7                  | 8                                | 9             |                |                             |      |
|-----------|----------------|------------------------|-----------------------|----------------------------|---|--------------------------------|--------------------|----------------------------------|---------------|----------------|-----------------------------|------|
| color     | Sample ID      | ABS <sub>initial</sub> | ABS <sub>sample</sub> | ABS <sub>initial</sub> * 4 | ABS <sub>final</sub><br>(Col 3 - Col 4) | TNT CONC ppm<br>(Col 5/0.0323) | Dilution<br>Factor | Result<br>(ppm)<br>Col 6 * Col 7 | TNT or<br>DNT | sample<br>time | XRF - Pb<br>result<br>(ppm) | STL  |
| CLEAR     | JPL2 - AP35(1) | .003                   | .012                  | .012                       | 0                                       | 0                              | 1.25               | 0                                | -             | 0900           |                             | ✓    |
| CLEAR     | AF29(2)        | -.001                  | .001                  | -.004                      | .005                                    | .154                           | 1.25               | .193                             | -             | 0905           |                             | ✓    |
| CLEAR     | AP36(.5)       | -.004                  | .030                  | -.016                      | .046                                    | 1.424                          | 1.67               | 2.37                             | -             | 916            |                             | ✓    |
| LT PINK   | AP37(.5)       | .006                   | .115                  | .024                       | .091                                    | 2.817                          | 1.67               | 41.764                           | -             | 915            |                             | ✓    |
| PINK      | AP38(.5)       | .011                   | .631                  | .044                       | .0587                                   | 18.17                          | 1.25               | 22.21                            | -             | 920            |                             | ✓    |
| RED       | AP39(.5)       | -.047                  | 1.720                 | .050                       | .0532                                   | 47.43                          | 1.67               | 79.20                            | -             | 925            |                             | ✓    |
| CLEAR     | AF30(1)        | .008                   | .090                  | .032                       | .058                                    | 1.79                           | 1.67               | 2.99                             | -             | 930            |                             | ✓    |
| DAKE PINK | AP40(.5)       | .033                   | 1.575                 | .132                       | 1.443                                   | 44.67                          | 1.67               | 74.60                            | -             | 935            |                             | ✓    |
| OK PINK   | AP41(.5)       | .031                   | 1.249                 | .124                       | 1.125                                   | 34.82                          | 2.5                | 87.07                            | -             | 940            |                             | ✓    |
| PINK      | AP42(.5)       | .009                   | .460                  | .036                       | .424                                    | 13.12                          | 1.67               | 21.92                            | -             | 945            |                             | ✓    |
| PINK      | AP43(.5)       | .081                   | .757                  | .324                       | .433                                    | 13.40                          | 5                  | 67.02                            | -             | 950            |                             | ✓    |
| CLEAR     | AF31(1)        | .001                   | .010                  | .004                       | .014                                    | .433                           | 1.67               | .723                             | -             | 955            |                             | ✓    |
| RED       | AP44(.5)       | .275                   | 2.729                 | 1.1                        | 1.627                                   | 50.43                          | 10                 | 504.3                            | TNT           | 1000           |                             | FAIL |
| PINK      | AP45(.5)       | .030                   | .331                  | .012                       | .211                                    | 6.53                           | 1.67               | 10.90                            | -             | 1005           |                             | ✓    |
| LT PINK   | AP46(.5)       | .014                   | .050                  | .056                       | -.006                                   | -.006                          | 2.5                | -4.464                           | -             | 1010           |                             | ✓    |
| LT PINK   | AP47(.5)       | .012                   | .116                  | .048                       | .068                                    | 2.10                           | 2.5                | 5.26                             | -             | 1015           |                             | ✓    |
| PINK      | AF32(1)        | .017                   | .588                  | .068                       | .52                                     | 16.09                          | 2.5                | 40.24                            | -             | 1020           |                             | ✓    |
| PINK      | AP48(.5)       | .015                   | .599                  | .06                        | .539                                    | 16.68                          | 1.67               | 27.86                            | -             | 1125           |                             | ✓    |
| LT PINK   | AP49(.5)       | .015                   | .235                  | .06                        | .175                                    | 5.417                          | 1.67               | 9.04                             | -             | 1030           |                             | ✓    |
| RED       | AP50(.5)       | .075                   | 3.266                 | .3                         | 2.916                                   | 90.27                          | 2.5                | 225.61                           | TNT           | 1040           |                             | FAIL |







Control \_\_\_\_\_

[illegible]



Date 2/23/07Background 0.000Control 0.328

|            | 1                | 2                      | 3                     | 4                          | 5                                       | 6                              | 7                  | 8                                | 9             |                |                             |      |
|------------|------------------|------------------------|-----------------------|----------------------------|---|--------------------------------|--------------------|----------------------------------|---------------|----------------|-----------------------------|------|
| color      | Sample ID        | ABS <sub>initial</sub> | ABS <sub>sample</sub> | ABS <sub>initial</sub> * 4 | ABS <sub>final</sub><br>(Col 3 - Col 4) | TNT CONC ppm<br>(Col 5/0.0323) | Dilution<br>Factor | Result<br>(ppm)<br>Col 6 * Col 7 | TNT or<br>DNT | sample<br>time | XRF - Pb<br>result<br>(ppm) | STL  |
| LT<br>PINK | JPL2- CP73 (0.5) | .023                   | .365                  | .012                       | .273                                    | 8.45                           | 1.25               | 10.56                            | —             | 800            |                             |      |
|            | CP74 (0.5)       | .006                   | .040                  | .024                       | .016                                    | .495                           | 1.25               | .619                             | —             | 805            |                             |      |
|            | CP75 (0.5)       | .003                   | .006                  | .012                       | .006                                    | .185                           | 1.25               | .232                             | —             | 810            |                             |      |
|            | CP76 (0.5)       | .001                   | .014                  | .004                       | .010                                    | .309                           | 1.25               | .386                             | —             | 818            |                             |      |
|            | CP77 (0.5)       | .001                   | .069                  | .004                       | .065                                    | 2.012                          | 1.25               | 2.515                            | —             | 820            |                             |      |
| RED        | CP78 (0.5)       | .770                   | 3.447                 | 3.08                       | .367                                    | 11.36                          | 10                 | 113.6                            |               | 825            |                             | ✓    |
| RED        | CP79 (0.5)       | .115                   | 3.411                 | .460                       | 2.951                                   | 91.36                          | 1.67               | 152.5                            |               | 830            |                             | ✓    |
| RED        | CP80 (0.5)       | .050                   | 3.271                 | .20                        | 3.071                                   | 95.07                          | 1.67               | 158.77                           |               | 835            |                             | ✓    |
| LT<br>PINK | CP81 (0.5)       | .014                   | .077                  | .056                       | .714                                    | 22.10                          | 1.25               | 27.62                            | —             | 840            |                             |      |
| ?          | CP82 (0.5)       | 0                      | .032                  | 0                          | .032                                    | .9907                          | 1.25               | 1.23                             | —             | 845            |                             |      |
| RED        | CP83 (0.5)       | .092                   | 1.360                 | .368                       | .992                                    | 30.71                          | 5                  | 153.56                           | .             | 850            |                             | ✓    |
| RED        | CP84 (0.5)       | .045                   | 3.053                 | .180                       | 2.876                                   | 89.04                          | 5                  | 445.2                            | FAIL          | 855            |                             | FAIL |
| DK<br>PINK | CP85 (0.5)       | .013                   | 1.427                 | .052                       | 1.375                                   | 42.569                         | 1.67               | 71.09                            | —             | 900            |                             |      |
| RED        | CP86 (0.5)       | .085                   | 3.394                 | .340                       | 3.054                                   | 94.55                          | 1.0                | 94.55                            | FAIL          | 905            |                             | FAIL |
| LT<br>PINK | CP87 (0.5)       | .008                   | .081                  | .032                       | .649                                    | 1.517                          | 1.25               | 1.896                            | —             | 910            |                             |      |
|            | CP88 (0.5)       | .003                   | .056                  | .012                       | .068                                    | 2.105                          | 1.25               | 2.631                            | —             | 915            |                             |      |
| RED        | CP89 (0.5)       | .027                   | 3.085                 | .108                       | 2.977                                   | 30.95                          | 2.5                | 77.39                            | —             | 920            |                             |      |
| RED        | CP90 (0.5)       | .033                   | 3.457                 | .132                       | 3.325                                   | 102.74                         | 10                 | 1,029.4                          | FAIL          | 925            |                             | FAIL |
| RED        | CP91 (0.5)       | .085                   | 3.339                 | .034                       | 2.999                                   | 92.84                          | 5                  | 464.2                            | FAIL          | 930            |                             | FAIL |
| LT<br>PINK | CP92 (0.5)       | .067                   | .724                  | .268                       | .456                                    | 14.17                          | 5                  | 70.58                            | —             | 935            |                             |      |



Date 2/26/07

Background 6.001

Control 0.327[illegible]



Date 2/27/07

Background D-000

Control ~~\_\_\_\_\_~~[illegible]







Control \_\_\_\_\_

[illegible]











Control \_\_\_\_\_

[illegible]



Control \_\_\_\_\_

[illegible]







DATE 1-3-67

See also 100-101, 102-103, 104-105, 106-107, 108-109, 110-111, 112-113, 114-115, 116-117, 118-119, 120-121, 122-123, 124-125, 126-127, 128-129, 130-131, 132-133, 134-135, 136-137, 138-139, 140-141, 142-143, 144-145, 146-147, 148-149, 150-151, 152-153, 154-155, 156-157, 158-159, 160-161, 162-163, 164-165, 166-167, 168-169, 170-171, 172-173, 174-175, 176-177, 178-179, 180-181, 182-183, 184-185, 186-187, 188-189, 190-191, 192-193, 194-195, 196-197, 198-199, 200-201, 202-203, 204-205, 206-207, 208-209, 210-211, 212-213, 214-215, 216-217, 218-219, 220-221, 222-223, 224-225, 226-227, 228-229, 230-231, 232-233, 234-235, 236-237, 238-239, 240-241, 242-243, 244-245, 246-247, 248-249, 250-251, 252-253, 254-255, 256-257, 258-259, 260-261, 262-263, 264-265, 266-267, 268-269, 270-271, 272-273, 274-275, 276-277, 278-279, 280-281, 282-283, 284-285, 286-287, 288-289, 290-291, 292-293, 294-295, 296-297, 298-299, 300-301, 302-303, 304-305, 306-307, 308-309, 310-311, 312-313, 314-315, 316-317, 318-319, 320-321, 322-323, 324-325, 326-327, 328-329, 330-331, 332-333, 334-335, 336-337, 338-339, 340-341, 342-343, 344-345, 346-347, 348-349, 350-351, 352-353, 354-355, 356-357, 358-359, 360-361, 362-363, 364-365, 366-367, 368-369, 370-371, 372-373, 374-375, 376-377, 378-379, 380-381, 382-383, 384-385, 386-387, 388-389, 390-391, 392-393, 394-395, 396-397, 398-399, 400-401, 402-403, 404-405, 406-407, 408-409, 410-411, 412-413, 414-415, 416-417, 418-419, 420-421, 422-423, 424-425, 426-427, 428-429, 430-431, 432-433, 434-435, 436-437, 438-439, 440-441, 442-443, 444-445, 446-447, 448-449, 450-451, 452-453, 454-455, 456-457, 458-459, 460-461, 462-463, 464-465, 466-467, 468-469, 470-471, 472-473, 474-475, 476-477, 478-479, 480-481, 482-483, 484-485, 486-487, 488-489, 490-491, 492-493, 494-495, 496-497, 498-499, 500-501, 502-503, 504-505, 506-507, 508-509, 510-511, 512-513, 514-515, 516-517, 518-519, 520-521, 522-523, 524-525, 526-527, 528-529, 530-531, 532-533, 534-535, 536-537, 538-539, 540-541, 542-543, 544-545, 546-547, 548-549, 550-551, 552-553, 554-555, 556-557, 558-559, 560-561, 562-563, 564-565, 566-567, 568-569, 570-571, 572-573, 574-575, 576-577, 578-579, 580-581, 582-583, 584-585, 586-587, 588-589, 590-591, 592-593, 594-595, 596-597, 598-599, 600-601, 602-603, 604-605, 606-607, 608-609, 610-611, 612-613, 614-615, 616-617, 618-619, 620-621, 622-623, 624-625, 626-627, 628-629, 630-631, 632-633, 634-635, 636-637, 638-639, 640-641, 642-643, 644-645, 646-647, 648-649, 650-651, 652-653, 654-655, 656-657, 658-659, 660-661, 662-663, 664-665, 666-667, 668-669, 670-671, 672-673, 674-675, 676-677, 678-679, 680-681, 682-683, 684-685, 686-687, 688-689, 690-691, 692-693, 694-695, 696-697, 698-699, 700-701, 702-703, 704-705, 706-707, 708-709, 710-711, 712-713, 714-715, 716-717, 718-719, 720-721, 722-723, 724-725, 726-727, 728-729, 730-731, 732-733, 734-735, 736-737, 738-739, 740-741, 742-743, 744-745, 746-747, 748-749, 750-751, 752-753, 754-755, 756-757, 758-759, 760-761, 762-763, 764-765, 766-767, 768-769, 770-771, 772-773, 774-775, 776-777, 778-779, 780-781, 782-783, 784-785, 786-787, 788-789, 790-791, 792-793, 794-795, 796-797, 798-799, 800-801, 802-803, 804-805, 806-807, 808-809, 810-811, 812-813, 814-815, 816-817, 818-819, 820-821, 822-823, 824-825, 826-827, 828-829, 830-831, 832-833, 834-835, 836-837, 838-839, 840-841, 842-843, 844-845, 846-847, 848-849, 850-851, 852-853, 854-855, 856-857, 858-859, 860-861, 862-863, 864-865, 866-867, 868-869, 870-871, 872-873, 874-875, 876-877, 878-879, 880-881, 882-883, 884-885, 886-887, 888-889, 890-891, 892-893, 894-895, 896-897, 898-899, 900-901, 902-903, 904-905, 906-907, 908-909, 910-911, 912-913, 914-915, 916-917, 918-919, 920-921, 922-923, 924-925, 926-927, 928-929, 930-931, 932-933, 934-935, 936-937, 938-939, 940-941, 942-943, 944-945, 946-947, 948-949, 950-951, 952-953, 954-955, 956-957, 958-959, 960-961, 962-963, 964-965, 966-967, 968-969, 970-971, 972-973, 974-975, 976-977, 978-979, 980-981, 982-983, 984-985, 986-987, 988-989, 990-991, 992-993, 994-995, 996-997, 998-999, 1000-1001, 1002-1003, 1004-1005, 1006-100

Control

|      | 1          | 2                    | 3                      | 4   | 5                                       | 6                                | 7                  | 8                                | 9             |                |                             |     |
|------|------------|----------------------|------------------------|---|---|----------------------------------|--------------------|----------------------------------|---------------|----------------|-----------------------------|-----|
| SOLR | Sample ID  | ABS <sub>total</sub> | ABS <sub>diluted</sub> | ABS <sub>total</sub> * 4<br>(Col 3 - Col 4) | ABS <sub>total</sub><br>(Col 3 - Col 4) | TNT CONC ppm<br>(Col 5 / 0.0323) | Dilution<br>Factor | Result<br>(ppm)<br>Col 8 * Col 7 | TNT or<br>DNT | sample<br>time | XRF - Pb<br>result<br>(ppm) | SPL |
| PURE | JPS-C1 (-) |                      |                        |   |   |                                  |                    |                                  |               | 1000           | 1094                        |     |
| PURE | C2 (-)     |                      |                        |   |   |                                  |                    |                                  |               | 1020           | 812                         |     |
| PURE | C3 (-)     |                      |                        |   |   |                                  |                    |                                  |               | 1040           | 1323                        |     |
| PURE | C4 (-)     |                      |                        |   |   |                                  |                    |                                  |               | 1100           | 235                         | ✓   |
| PURE | C5 (-)     |                      |                        |   |   |                                  |                    |                                  |               | 1120           | 96                          |     |
| PURE | D1 (-)     |                      |                        |   |   |                                  |                    |                                  |               | 1140           | 300                         |     |
| PURE | D2 (-)     |                      |                        |   |   |                                  |                    |                                  |               | 1200           | 31                          |     |
| PURE | D3 (-)     |                      |                        |   |   |                                  |                    |                                  |               | 1220           | 40                          |     |
| PURE | D4 (-)     |                      |                        |   |   |                                  |                    |                                  |               | 1240           | 426                         | ✓   |
| PURE | J D5 (-)   |                      |                        |   |   |                                  |                    |                                  |               | 1300           | 54                          |     |



Control —

[illegible]



Date 1.9.07

[illegible]



Date 1.8.07

[illegible]



Date 1-3-07

1944-1945

Control

[illegible]



Control         [illegible]



Date 1.8.07

[illegible]



Date 1.9.07

[illegible]



[illegible]



Date 7.7.06Background 0.000Control 0.340

|           | 1               | 2                      | 3                     | 4                          | 5                                       | 6                              | 7                  | 8                                | 9             |                |     |
|-----------|-----------------|------------------------|-----------------------|----------------------------|---|--------------------------------|--------------------|----------------------------------|---------------|----------------|-----|
| color     | Sample ID       | ABS <sub>initial</sub> | ABS <sub>sample</sub> | ABS <sub>initial</sub> * 4 | ABS <sub>final</sub><br>(Col 3 - Col 4) | TNT CONC ppm<br>(Col 5/0.0323) | Dilution<br>Factor | Result<br>(ppm)<br>Col 6 * Col 7 | TNT or<br>DNT | sample<br>time | STL |
| clear     | JPM3-OTF-API(1) | 0.004                  | 0.008                 | -0.016                     | 0.024                                   | 0.743                          | 2.5                | 1.858                            | —             | 1015           |     |
| lt pink   | 2(1)            | 0.006                  | 0.168                 | 0.024                      | 0.144                                   | 4.458                          | 2.5                | 11.146                           | —             | 1020           |     |
| clear     | 3(1)            | 0.003                  | 0.093                 | 0.012                      | 0.071                                   | 2.198                          | 2.5                | 5.495                            | —             | 1025           |     |
| red peach | 4(1)            | 0.002                  | 0.662                 | 0.008                      | 0.654                                   | 20.246                         | 2.5                | 50.619                           | —             | 1030           |     |
| lt pink   | 5(1)            | 0.002                  | 0.111                 | 0.008                      | 0.103                                   | 3.189                          | 5                  | 15.944                           | —             | 1035           |     |
| clear     | 6(1)            | 0.003                  | 0.032                 | -0.012                     | 0.044                                   | 1.362                          | 1.67               | 2.275                            | —             | 1040           |     |
| lt pink   | 7(1)            | 0.004                  | 0.321                 | 0.036                      | 0.285                                   | 8.824                          | 5                  | 44.118                           | —             | 1045           |     |
| lt plum   | 8(1)            | 0.032                  | 6.829                 | 0.128                      | 0.701                                   | 21.703                         | 5                  | 108.514                          | DNT           | 1050           |     |
| lt pink   | 9(1)            | 0.017                  | 0.285                 | 0.068                      | 0.217                                   | 6.718                          | 2.5                | 16.796                           | —             | 1055           |     |
| clear     | 10(1)           | 0.001                  | 0.034                 | -0.004                     | 0.038                                   | 1.176                          | 1.67               | 1.964                            | —             | 1100           |     |
| red pink  | 11(1)           | 0.015                  | 0.784                 | 0.060                      | 0.724                                   | 22.415                         | 1.67               | 37.433                           | —             | 1105           |     |
| clear     | 12(1)           | 0.004                  | 0.004                 | -0.016                     | 0.020                                   | 0.619                          | 1.67               | 1.034                            | —             | 1110           |     |
| lt pink   | 13(1)           | 0.004                  | 0.164                 | 0.016                      | 0.148                                   | 4.582                          | 1.67               | 7.652                            | —             | 1115           |     |
| clear     | 14(1)           | 0.001                  | 0.043                 | 0.004                      | 0.039                                   | 1.207                          | 1.67               | 2.016                            | —             | 1120           |     |
| red       | 15(1)           | 0.029                  | 3.462                 | 0.116                      | 3.346                                   | 103.591                        | 10                 | 1035.913                         | TNT           | 1125           |     |
| lt pink   | 16(1)           | 0.002                  | 0.137                 | -0.004                     | 0.141                                   | 4.3653                         | 1.67               | 7.2901                           | —             | 1130           |     |
|           |                 |                        |                       |                            |   |                                | 1.67               |                                  |               |                |     |
| clear     | JPM3 OTF-AF1(1) | 0.003                  | 0.036                 | -0.012                     | 0.048                                   | 1.48606                        | 1.67               | 2.4817                           | —             | 1135           |     |
| red       | 2(1)            | 0.032                  | 3.392                 | 0.128                      | 3.264                                   | 101.0576                       | 1.67               | 168.757                          | TNT           | 1140           |     |
| clear     | 3(1)            | 0.001                  | 0.051                 | 0.004                      | 0.055                                   | 1.70278                        | 1.67               | 2.8456                           | —             | 1145           |     |
| clear     | 4(1)            | 0.005                  | 0.024                 | 0.020                      | 0.004                                   | 0.1238                         | 1.67               | 0.2068                           | —             | 1150           |     |
| lt pink   | 5(1)            | 0.003                  | 0.152                 | 0.012                      | 0.140                                   | 4.334                          | 1.25               | 5.4179                           | —             | 1155           |     |
| REDON     | JPM3-OTF-AF2(1) | 0.001                  | 1.514                 | 0.044                      | 1.0                                     | 45.511                         | 5                  | 227.555                          |               | 1111           |     |



Date 7/10/06

Background                     

Control 0-316

[illegible]



Date 7/7/06Background 0Control .312

|                  | 1                 | 2                      | 3                     | 4                          | 5                                       | 6                              | 7                  | 8                                | 9             |                |     |
|------------------|-------------------|------------------------|-----------------------|----------------------------|---|--------------------------------|--------------------|----------------------------------|---------------|----------------|-----|
| color            | Sample ID         | ABS <sub>initial</sub> | ABS <sub>sample</sub> | ABS <sub>initial</sub> * 4 | ABS <sub>final</sub><br>(Col 3 - Col 4) | TNT CONC ppm<br>(Col 5/0.0323) | Dilution<br>Factor | Result<br>(ppm)<br>Col 6 * Col 7 | TNT or<br>DNT | sample<br>time | STL |
| clear            | JP-M3-ITF-AF1 (2) | .002                   | .007                  | .008                       | .001                                    | .0309                          | 2.5                | .051                             | —             | 11:00          | ✓   |
| clear            | AF2               | .004                   | .009                  | .016                       | .025                                    | 1.774                          | 1.67               | 1.292                            | —             | 11:05          | ✓   |
| clear            | AF3               | .005                   | .016                  | .020                       | .036                                    | 1.114                          | 1.67               | 1.860                            | —             | 11:10          | ✓   |
| clear            | AF4               | .004                   | .005                  | .016                       | .021                                    | 0.650                          | 1.67               | 1.085                            | —             | 11:15          | ✓   |
| clear            | AF5               | .004                   | .036                  | .016                       | .054                                    | 1.672                          | 1.67               | 2.792                            | —             | 11:20          | ✓   |
| clear            | AF6               | .011                   | .004                  | .044                       | .040                                    | 1.238                          | 1.25               | 2.1547                           | —             | 11:25          | ✓   |
| clear            | AF7               | .002                   | .004                  | .008                       | .012                                    | .374                           | 2.5                | .935                             | —             | 11:30          | ✓   |
| clear            | AF8               | .004                   | .006                  | .016                       | .022                                    | .681                           | 2.5                | 1.702                            | —             | 11:35          | ✓   |
| clear            | AF9               | .011                   | .002                  | .044                       | .042                                    | 1.300                          | 1.67               | 2.171                            | —             | 11:40          | ✓   |
| clear            | ↓ AF10            | .010                   | .004                  | .040                       | .036                                    | 1.114                          | 2.5                | 2.785                            | —             | 11:45          | ✓   |
| <del>clear</del> |                   |                        |                       |                            |   |                                |                    |                                  |               |                |     |
|                  |                   |                        |                       |                            |   |                                |                    |                                  |               |                |     |
| clear            | JP-M3-ITF-AP1 (1) | .005                   | .029                  | .020                       | .049                                    | 1.517                          | 1.67               | 2.533                            | —             | 10:30          | ✓   |
| clear            | AP2               | .008                   | .028                  | .032                       | .060                                    | 1.857                          | 1.67               | 3.101                            | —             | 10:35          | ✓   |
| clear            | AP3               | .008                   | .062                  | .032                       | .030                                    | .928                           | 1.67               | 1.547                            | —             | 10:40          | ✓   |
| clear            | ↓ AP4             | .004                   | .103                  | .016                       | .119                                    | 3.684                          | 1.67               | 6.152                            | —             | 10:45          | ✓   |
| clear            | AP5               | .010                   | .039                  | .040                       | .079                                    | 2.445                          | 1.67               | 4.084                            | —             | 10:50          | ✓   |
|                  |                   |                        |                       |                            |   |                                | 2.5                |                                  |               |                |     |
|                  |                   |                        |                       |                            |   |                                |                    |                                  |               |                |     |
|                  |                   |                        |                       |                            |   |                                |                    |                                  |               |                |     |

H. Pink



Date 7/19/06Background 0.001Control 0.328

|         | 1               | 2                      | 3                     | 4                          | 5                                       | 6                              | 7                  | 8                                | 9             |                | $\Delta = 1.55$<br>XRF - Pb result (ppm) | STL  |
|---------|-----------------|------------------------|-----------------------|----------------------------|---|--------------------------------|--------------------|----------------------------------|---------------|----------------|--|------|
| color   | Sample ID       | ABS <sub>initial</sub> | ABS <sub>sample</sub> | ABS <sub>initial</sub> * 4 | ABS <sub>final</sub><br>(Col 3 - Col 4) | TNT CONC ppm<br>(Col 5/0.0323) | Dilution<br>Factor | Result<br>(ppm)<br>Col 6 * Col 7 | TNT or<br>DNT | sample<br>time |  |      |
|         | IPM3-ITF-AP6(1) |                        |                       |                            |   |                                |                    |                                  |               | 1315           | 940                                      |      |
|         | 7(1)            |                        |                       |                            |   |                                |                    |                                  |               | 1320           | 516                                      |      |
| clear   | 8(1)            | 0.004                  | 0.027                 | 0.016                      | 0.011                                   | 0.3405                         | 1.67               | 0.5686                           | —             | 1325           | 391                                      | ✓    |
| clear   | 9(1)            | 0.045                  | 0.071                 | 0.184                      | -0.109                                  | 3.3746                         | 1.67               | 5.635                            | —             | 1330           | 474                                      | ✓    |
|         | 10(1)           |                        |                       |                            |   |                                |                    |                                  |               | 1335           | 1107                                     |      |
| clear   | 11(1)           | 0.005                  | 0.030                 | 0.020                      | 0.010                                   | 0.3095                         | 1.67               | 0.517                            | —             | 1340           | 450                                      | ✓    |
| clear   | AF 11(3)        | 0.002                  | 0.012                 | 0.008                      | 0.004                                   | 0.1238                         | 1.25               | 0.1547                           | —             | 1345           | 420                                      | ✓    |
| clear   | 12(2)           | 0.001                  | 0.015                 | 0.004                      | 0.011                                   | 0.3405                         | 2.5                | 0.8513                           | —             | 1350           | 33                                       | ✓    |
| blue    | 13(2)           | 0.003                  | 0.064                 | 0.012                      | 0.052                                   | 1.6099                         | 2.5                | 4.0248                           | DNT           | 1355           | 27                                       | ✓    |
| blue    | 14(2)           | 0.001                  | 0.085                 | 0.004                      | 0.081                                   | 2.5077                         | 5                  | 12.538                           | DNT           | 1400           | 24                                       | ✓    |
| blue    | 15(2)           | 0.020                  | 0.090                 | 0.080                      | .009                                    | 0.2786                         | 1.67               | 0.4653                           | —             | 1405           | 420                                      | ✓    |
| clear   | 16(2)           | 0.003                  | 0.006                 | 0.012                      | -0.006                                  | 0.18575                        | 5                  | 0.9287                           | —             | 1410           | 22                                       | ✓    |
| clear   | 17(2)           | 0.005                  | 0.012                 | 0.020                      | -0.008                                  | 0.2476                         | 1.67               | 0.4136                           | —             | 1415           | 420                                      | ✓    |
| dk blue | 18(2)           | 0.016                  | 0.498                 | 0.064                      | 0.434                                   | 13.436                         | 2.5                | 33.591                           | DNT           | 1420           | 445                                      | FAIL |
| blue    | 19(2)           | 0.008                  | 0.167                 | 0.032                      | 0.135                                   | 4.179                          | 1.25               | 5.224                            | DNT           | 1425           | 32                                       | ✓    |
| clear   | 20(2)           | 0.007                  | 0.020                 | 0.008                      | 0.012                                   | 0.3715                         | 5.25               | 1.857                            | —             | 1430           | 39                                       | ✓    |
| clear   | 21(2)           | 0.014                  | 0.017                 | 0.056                      | -0.039                                  | 1.2074                         | 1.67               | 2.0164                           | —             | 1435           | 29                                       | ✓    |
| blue    | 22(3)           | 0.017                  | 0.205                 | 0.137                      | 0.068                                   | 4.2414                         | 1.67               | 7.083                            | DNT           | 1440           | 271                                      | ✓    |
| clear   | 23(2)           | 0.004                  | 0.006                 | 0.016                      | -0.010                                  | 0.3095                         | 2.5                | 0.7739                           | —             | 1445           | 22                                       | ✓    |

FAIL

FAIL

FAIL

FAIL  
DNT



Control 0.328[illegible]

FAIL  
FAIL



Control 0.313[illegible]



Date 7/25/06Background 0.001Control 0.327

|            | 1                | 2                      | 3                     | 4                          | 5                                       | 6                              | 7                  | 8                                | 9             |                |                             |      |
|------------|------------------|------------------------|-----------------------|----------------------------|---|--------------------------------|--------------------|----------------------------------|---------------|----------------|-----------------------------|------|
| color      | Sample ID        | ABS <sub>initial</sub> | ABS <sub>sample</sub> | ABS <sub>initial</sub> * 4 | ABS <sub>final</sub><br>(Col 3 - Col 4) | TNT CONC ppm<br>(Col 5/0.0323) | Dilution<br>Factor | Result<br>(ppm)<br>Col 6 * Col 7 | TNT or<br>DNT | sample<br>time | XRF - Pb<br>result<br>(ppm) | STL  |
| DMV<br>ATK | JPM3-ITF-AP23(1) | 0.019                  | 1.823                 | 0.076                      | 1.797                                   | 54.087                         | 5                  | 210.35                           | TNT           | 1205           | 21                          | FAIL |
| CLEAR      | JPM3-ITF-AP16(1) | 0.011                  | 0.025                 | 0.044                      | 0.0465                                  | 30.957                         | 2.5                | 77.329                           | —             | 1205           | 459                         | ✓    |
| CLEAR      | AP17(1)          | 0.010                  | 0.014                 | 0.040                      | 0.054                                   | 1.672                          | 1.67               | 2.792                            | —             | 1210           | 31                          | ✓    |
| CLEAR      | AP18(1)          | 0.007                  | 0.003                 | 0.028                      | 0.031                                   | 0.959                          | 2.5                | 2.399                            | —             | 1215           | 53                          | ✓    |
| CLEAR      | AP19(1)          | 0.004                  | 0.012                 | 0.016                      | 0.028                                   | 0.866                          | 5                  | 4.334                            | —             | 1220           | 68                          | ✓    |
|            | AP20(1)          |                        |                       |                            |   |                                |                    |                                  |               | 1225           | 3642                        | FAIL |
| CLEAR      | AP21(1)          | 0.000                  | 0.016                 | 0.000                      | 0.016                                   | 0.495                          | 1.67               | 0.827                            | —             | 1230           | 263                         | ✓    |
|            | AP22(1)          |                        |                       |                            |   |                                |                    |                                  |               | 1235           | 561                         | FAIL |
| CLEAR      | JPM3-ITF-AF36(3) | 0.012                  | 0.002                 | 0.048                      | 0.046                                   | 1.424                          | 1.67               | 2.378                            | —             | 1240           | 66                          | ✓    |
| BLUE       | AF37(1)          | 0.009                  | 0.189                 | 0.036                      | 0.225                                   | 6.965                          | 1.67               | 11.633                           | —             | 1245           | 217                         | ✓    |
| CLEAR      | AF38(2)          | 0.006                  | 0.003                 | 0.024                      | 0.021                                   | 0.650                          | 1.67               | 1.085                            | —             | 1250           | 75                          | ✓    |
| CLEAR      | AF39(2)          | 0.006                  | 0.004                 | 0.024                      | 0.020                                   | 0.619                          | 2.5                | 1.547                            | —             | 1255           | 28                          | ✓    |
| CLEAR      | AF41(2)          | 0.008                  | 0.004                 | 0.032                      | 0.028                                   | 0.866                          | 1.67               | 1.447                            | —             | 1300           | 24                          | ✓    |
| CLEAR      | AF41(2)          | 0.007                  | 0.002                 | 0.028                      | 0.026                                   | 0.805                          | 1.67               | 1.344                            | —             | 1305           | 19                          | ✓    |
| CLEAR      | AF42(2)          | 0.007                  | 0.002                 | 0.028                      | 0.026                                   | 0.805                          | 1.67               | 1.344                            | —             | 1310           | 32                          | ✓    |
| CLEAR      | AF42(2)          | 0.008                  | 0.000                 | 0.020                      | 0.020                                   | 0.619                          | 2.5                | 1.547                            | —             | 1315           | 31                          | ✓    |
|            | AF44(2)          | 0.007                  | 0.001                 | 0.028                      | 0.027                                   | 0.836                          | 1.67               | 1.167                            | —             | 1320           | 115                         | ✓    |
|            | AF45(2)          |                        |                       |                            |   |                                |                    |                                  |               | 1325           | 711                         | FAIL |



Date 7/25/06Background 0.001Control 0.327

|           | 1                | 2                      | 3                     | 4                          | 5                                       | 6                              | 7                  | 8                                | 9             |                |                             |      |
|-----------|------------------|------------------------|-----------------------|----------------------------|---|--------------------------------|--------------------|----------------------------------|---------------|----------------|-----------------------------|------|
| color     | Sample ID        | ABS <sub>initial</sub> | ABS <sub>sample</sub> | ABS <sub>initial</sub> * 4 | ABS <sub>final</sub><br>(Col 3 - Col 4) | TNT CONC ppm<br>(Col 5/0.0323) | Dilution<br>Factor | Result<br>(ppm)<br>Col 6 * Col 7 | TNT or<br>DNT | sample<br>time | XRF - Pb<br>result<br>(ppm) | STL  |
| Dark Pink | JPM3-OTF-AP23(1) | 0.019                  | 1.823                 | .076                       | 1.747                                   | 54.087                         | 5                  | 270.43                           | TNT           | 1200           | 24                          | FAIL |
| Clear     | JPM3-ITF-AP16(1) | 0.011                  | 0.025                 | 0.44                       | 0.465                                   | 30.957                         | 2.5                | 77.399                           | —             | 1200           | 459                         | ✓    |
| Clear     | AP17(1)          | 0.010                  | 0.014                 | 0.40                       | .054                                    | 1.672                          | 1.67               | 2.792                            | —             | 1210           | 31                          | ✓    |
| Clear     | AP18(1)          | 0.007                  | 0.003                 | 0.028                      | 0.031                                   | 0.959                          | 2.5                | 2.397                            | —             | 1215           | 53                          | ✓    |
| Clear     | AP19(1)          | 0.004                  | 0.002                 | 0.016                      | 0.028                                   | 0.866                          | 5                  | 4.334                            | —             | 1220           | 88                          | ✓    |
| Clear     | AP20(1)          |                        |                       |                            |   |                                |                    |                                  |               | 1225           | 3642                        | FAIL |
| Clear     | AP21(1)          | 0.000                  | .016                  | .006                       | 0.016                                   | 0.505                          | 1.67               | 0.827                            | —             | 1230           | 263                         | ✓    |
| Clear     | AP22(1)          |                        |                       |                            |   |                                |                    |                                  |               | 1235           | 561                         | FAIL |
| Clear     | JPM3-ITF-AP36(3) | 0.012                  | 0.002                 | 0.048                      | .046                                    | 1.424                          | 1.67               | 2.378                            | —             | 1240           | 66                          | ✓    |
| Blue      | AP37(1)          | 0.009                  | 0.189                 | 0.36                       | 0.225                                   | 6.965                          | 1.67               | 11.633                           | —             | 1245           | 117                         | ✓    |
| Clear     | AP38(1)          | 0.006                  | 0.003                 | 0.024                      | .021                                    | 0.650                          | 1.67               | 1.085                            | —             | 1250           | 75                          | ✓    |
| Clear     | AP39(1)          | 0.004                  | 0.004                 | 0.024                      | .020                                    | 0.619                          | 2.5                | 1.547                            | —             | 1255           | 28                          | ✓    |
| Clear     | AP41(1)          | 0.008                  | 0.004                 | 0.032                      | .028                                    | 0.866                          | 1.67               | 1.447                            | —             | 1300           | 24                          | ✓    |
| Clear     | AP41(2)          | 0.007                  | 0.002                 | 0.028                      | .026                                    | 0.805                          | 1.67               | 1.344                            | —             | 1305           | 19                          | ✓    |
| Clear     | AP42(1)          | 0.007                  | 0.002                 | 0.028                      | .026                                    | 0.805                          | 1.67               | 1.344                            | —             | 1310           | 32                          | ✓    |
| Clear     | AP42(2)          | 0.008                  | 0.000                 | 0.020                      | .020                                    | 0.619                          | 2.5                | 1.547                            | —             | 1315           | 31                          | ✓    |
|           | AP44(1)          | 0.007                  | 0.001                 | 0.028                      | .027                                    | .836                           | 1.67               | 1.167                            | —             | 1320           | 115                         | ✓    |
|           | AP45(1)          |                        |                       |                            |   |                                |                    |                                  |               | 1325           | 711                         | FAIL |



Control 0.331

[illegible]







Date 7/28/06Background 0.001Control 0.315

|                  | 1                 | 2                      | 3                     | 4                          | 5                                       | 6                              | 7                  | 8                                | 9             |                |                             |      |
|------------------|-------------------|------------------------|-----------------------|----------------------------|---|--------------------------------|--------------------|----------------------------------|---------------|----------------|-----------------------------|------|
| color            | Sample ID         | ABS <sub>initial</sub> | ABS <sub>sample</sub> | ABS <sub>initial</sub> * 4 | ABS <sub>final</sub><br>(Col 3 - Col 4) | TNT CONC ppm<br>(Col 5/0.0323) | Dilution<br>Factor | Result<br>(ppm)<br>Col 6 * Col 7 | TNT or<br>DNT | sample<br>time | XRF - Pb<br>result<br>(ppm) | STL  |
| Clear            | JPM3 ITF AFS60    | -0.004                 | -0.002                | -0.016                     | -0.014                                  | 0.447                          | 2.5                | 1.118                            | -             | 900            | 112                         | ✓    |
| Clear            | AF57(2)           | -0.009                 | -0.007                | -0.036                     | -0.029                                  | 0.8978                         | 2.5                | 2.244                            | -             | 905            | 22                          | ✓    |
| Clear            | AF58(2)           | -0.021                 | -0.014                | -0.084                     | -0.070                                  | 2.167                          | 1.67               | 3.619                            | -             | 910            | <18                         | ✓    |
| Clear            | AF59(2)           | -0.014                 | -0.011                | -0.056                     | -0.045                                  | 1.393                          | 1.67               | 2.326                            | -             | 915            | <16                         | ✓    |
| Clear            | AF60(2)           | -0.015                 | -0.010                | -0.060                     | -0.050                                  | 1.547                          | 1.67               | 2.585                            | -             | 920            | 22                          | ✓    |
| <del>Clear</del> | AF61(2)           | -                      | -                     | -                          | -                                       | -                              | -                  | -                                | -             | 925            | 1471                        | FAIL |
| Clear            | AF62(2)           | -0.012                 | -0.007                | -0.048                     | -0.041                                  | 1.269                          | 1.67               | 2.119                            | -             | 930            | 29                          | ✓    |
| Clear            | AF63(2)           | -0.011                 | -0.011                | -0.044                     | -0.033                                  | 1.021                          | 2.5                | 2.554                            | -             | 935            | <18                         | ✓    |
| * Clear          | AF64(2)           | -0.003                 | 1.391                 | 0.012                      | 1.379                                   | 42.693                         | 2.5                | 106.73                           | -             | 940            | 22                          | ✓    |
| Red/<br>Brown    | AF65(2)           | -0.010                 | -0.007                | -0.040                     | -0.033                                  | 1.021                          | 1.67               | 1.705                            | -             | 945            | 27                          | ✓    |
| Clear            | AF66(2)           | -0.010                 | -0.008                | -0.040                     | -0.032                                  | 0.991                          | 1.67               | 1.654                            | -             | 950            | 29                          | ✓    |
| Clear            | JPM3 ITF AP 30(1) | -0.012                 | -0.007                | -0.048                     | -0.041                                  | 1.269                          | 1.67               | 2.119                            | -             | 955            | 62                          | ✓    |
| Clear            | JPM3 ITF AP 31(1) | -0.009                 | -0.003                | -0.036                     | -0.033                                  | 1.021                          | 5                  | 5.105                            | -             | 1000           | 100                         | ✓    |
| * PINK           | JPM3 ITF AF64(2)  | -0.013                 | 0.543                 | -0.052                     | 0.595                                   | 18.593                         | 5                  | 92.968                           | -             | 740            |                             |      |
|                  |                   |                        |                       |                            |   |                                |                    |                                  |               |                |                             |      |
|                  |                   |                        |                       |                            |   |                                |                    |                                  |               |                |                             |      |
|                  |                   |                        |                       |                            |   |                                |                    |                                  |               |                |                             |      |
|                  |                   |                        |                       |                            |   |                                |                    |                                  |               |                |                             |      |
|                  |                   |                        |                       |                            |   |                                |                    |                                  |               |                |                             |      |
|                  |                   |                        |                       |                            |   |                                |                    |                                  |               |                |                             |      |

REBUN (7/31/06)











Date 8.4.06

Background 0.000

Control 0.333[illegible]



Control 0.335[illegible]



Control 0.333[illegible]



Control                     [illegible]



































Control  $\bar{x} = 337$ [illegible]



Date 8/24/06

Background D-001

Control 0.329

[illegible]



Date \_\_\_\_\_

8/28/06

## Background

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Control

0.327

[illegible]







Date 8/31/06

Background φ. 6φ 1

Control                     [illegible]



Control \_\_\_\_\_

[illegible]



Date 9/29/06

Background 0.001

Control 0.318

[illegible]



Date 10/2/06Background 0.001Control 0.321

|            | 1               | 2                      | 3                     | 4                          | 5                                       | 6                              | 7                  | 8                                | 9             |                |                             |     |
|------------|-----------------|------------------------|-----------------------|----------------------------|---|--------------------------------|--------------------|----------------------------------|---------------|----------------|-----------------------------|-----|
| color      | Sample ID       | ABS <sub>initial</sub> | ABS <sub>sample</sub> | ABS <sub>initial</sub> * 4 | ABS <sub>final</sub><br>(Col 3 - Col 4) | TNT CONC ppm<br>(Col 5/0.0323) | Dilution<br>Factor | Result<br>(ppm)<br>Col 6 * Col 7 | TNT or<br>DNT | sample<br>time | XRF - Pb<br>result<br>(ppm) | STL |
|            | JPM3-ITF-AF1806 | .003                   | .001                  | -.012                      | .013                                    | .402                           | 1.67               | .672                             | —             | 900            |                             | ✓   |
|            | AF1816          | .002                   | .010                  | -.008                      | .002                                    | .0619                          | 1.67               | .103                             | —             | 905            |                             | ✓   |
|            | AF1826          | .001                   | .006                  | .004                       | .002                                    | .0619                          | 1.67               | .103                             | —             | 910            |                             | ✓   |
|            | AF1836          | .005                   | .020                  | .020                       | 0.000                                   | —                              | 1.67               | —                                | —             | 915            |                             | ✓   |
|            | AF1846          | .002                   | .003                  | .008                       | -.005                                   | -.154                          | 1.67               | -.258                            | —             | 920            |                             | ✓   |
|            | AF1856          | .003                   | .000                  | -.012                      | .012                                    | .371                           | 1.67               | .620                             | —             | 925            |                             | ✓   |
|            | AF1866          | .000                   | .005                  | .000                       | .005                                    | .154                           | 1.25               | .1725                            | —             | 930            |                             | ✓   |
|            | AF1876          | .005                   | -.002                 | .020                       | -.022                                   | -.681                          | 1.25               | -.851                            | —             | 935            |                             | ✓   |
|            | AF1886          | .001                   | .004                  | .004                       | 0                                       | —                              | 1.25               | —                                | —             | 940            |                             | ✓   |
|            | AF1896          | .003                   | .004                  | .012                       | -.008                                   | -.247                          | 1.25               | -.309                            | —             | 945            |                             | ✓   |
|            | AF1906          | .001                   | .006                  | .004                       | .002                                    | .0619                          | 1.25               | .0773                            | —             | 950            |                             | ✓   |
| 9/11       | ↓ AF1916        | .001                   | .153                  | .004                       | 0.149                                   | 4.613                          | 1.25               | 5.76                             | —             | 955            |                             | ✓   |
|            | JPWE-ITF-AF816  | .001                   | .014                  | .004                       | .010                                    | .309                           | 1.25               | .386                             | —             | 1000           |                             | ✓   |
|            | ↓ AF826         | .009                   | .053                  | .034                       | .017                                    | .526                           | 1.67               | .878                             | —             | 1005           |                             | ✓   |
| LT<br>PINK | ↓ AF836         | .000                   | .049                  | .000                       | 15.5049                                 | 1.517                          | 1.25               | 1.896                            | —             | 1010           |                             | ✓   |
|            |                 |                        |                       |                            |   |                                |                    |                                  |               |                |                             |     |
|            |                 |                        |                       |                            |   |                                |                    |                                  |               |                |                             |     |
|            |                 |                        |                       |                            |   |                                |                    |                                  |               |                |                             |     |
|            |                 |                        |                       |                            |   |                                |                    |                                  |               |                |                             |     |
|            |                 |                        |                       |                            |   |                                |                    |                                  |               |                |                             |     |
|            |                 |                        |                       |                            |   |                                |                    |                                  |               |                |                             |     |
|            |                 |                        |                       |                            |   |                                |                    |                                  |               |                |                             |     |

TO WEB  
FOR XRF  
SENT TO  
STL



Control 6-329

[illegible]



Control \_\_\_\_\_

[illegible]



Control 0-325

[illegible]



Control

[illegible]















Control \_\_\_\_\_

[illegible]







Control [illegible]

















By

Chkd. By

JPM

Date

12/6/06

Client

Sheet

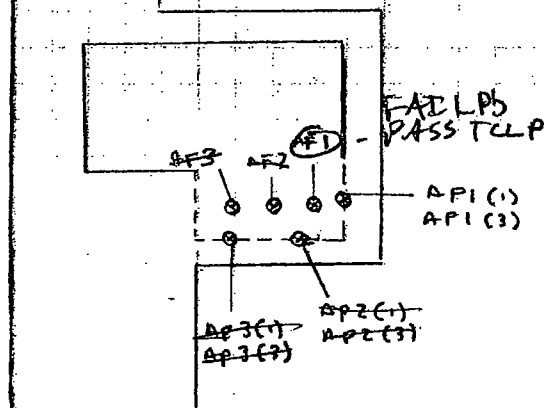
of

Description

M4

Job No.

|                |      |              |
|----------------|------|--------------|
| JPM4 - API (1) | 1430 | XRF<br>PH    |
| API (3)        | 1435 | FAIL         |
| AP2 (1)        | 1440 | 45           |
| AP2 (3)        | 1445 | 26           |
| AP3 (1)        | 1450 | 44           |
| AP3 (3)        | 1455 | 250 STL TCLP |
| AP1 (4)        | 1500 | 36           |
| AP2 (4)        | 1505 | STL          |
| AP3 (4)        | 1510 | STL          |

TOO  
WET



Date 9/27/04

## Background

Control \_\_\_\_\_

[illegible]





By SR Date 10/23/06 Sheet 1 of 1  
Chkd. By \_\_\_\_\_ Description M12 - CHARACTERIZATION Job No. \_\_\_\_\_

|                |    | mg/kg (ppm) |           | mg/L   |           |
|----------------|----|-------------|-----------|--------|-----------|
|                |    | Pb TOTAL    | PASS/FAIL | Pb TOL | PASS/FAIL |
| JPM12 - CP - 1 |    | 860         | F →       | 0.51   | P         |
|                | 2  | 450         | P →       | 0.79   | P         |
|                | 3  | 490         | P →       | 0.016  | P         |
|                | 4  | 170         | P →       | 0.037  | P         |
|                | 5  | 33          | P         |        |           |
|                | 6  | 28          | P         |        |           |
|                |    |             |           |        |           |
| JPM12 - CP - 1 |    | 35          | P         |        |           |
|                | 2  | 430         | P →       | 0.11   | P         |
|                | 3  | 530         | F →       | 0.10   | P         |
|                | 4  | 640         | F →       | 0.23   | P         |
|                | 5  | 490         | P →       | 1.24   | P         |
|                | 6  | 710         | F →       | 0.79   | P         |
|                | 7  | 100         | P →       | 0.12   | P         |
|                | 8  | 330         | P →       | 0.052  | P         |
|                | 9  | 170         | P →       | 0.019  | P         |
|                | 10 | 700         | P →       | 1.24   | P         |
|                | 11 | 544         | F         |        |           |
|                | 12 | 410         | P →       | 1.94   | P         |
|                | 13 | 240         | P →       | 7.07   | P         |
|                | 14 | 300         | P →       | 0.025  | P         |
|                | 15 | 200         | P →       | 2      | P         |
|                | 16 | 92          | P         |        |           |
|                | 17 | 500         | F →       | 1.51   | P         |



















Date 11/22/06

## Background

Control \_\_\_\_\_

[illegible]



Control \_\_\_\_\_

[illegible]



Control \_\_\_\_\_

[illegible]







Date 12/18/06

## Background

Control \_\_\_\_\_

[illegible]



2



**APPENDIX D**

**LETTER OF COMPLETION FOR MEC REMOVAL ACTIVITIES AT SITE L2**



# ***USA Environmental, Inc.***

---

April 30, 2007

Montgomery Watson Harza (MWH)  
Attn: Mr. Kurt L. Adams  
175 W. Jackson St.  
Suite 1900  
Chicago, IL 60604

Subject: After Action Report (AAR), MEC Removal Action of Site L2, Joliet Army Ammunition Plant, Joliet, IL

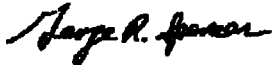
Dear Mr. Adams:

USA Environmental, Inc. (USA) has completed all remedial action (RA) activities for the removal of MEC items at Site L2 at the former Joliet Army Ammunition Plant (JOAAP) in Wilmington, Illinois.

USA cleared the L2 Site to a depth of one foot in accordance with the Scope of Work (SOW), the Explosives Safety Submission (ESS) and contract requirements. During RA USA performed the following:

- Performed analog detection and intrusive investigations to a depth of one foot below ground surface (bgs) on 155 grids;
- Recovered 13,690 pounds (lbs) of Munitions Debris (MD);
- Recovered 4,949 lbs of Range Residue (RR); and
- Recovered, treated, and/or disposed of 2,143 Munitions and Explosives of Concern/ Material Potentially Presenting an Explosive Hazard (MEC/MPPEH) items.

All RA activities included Quality Control (QC) checks by USA, QC oversight by MWH, and U.S. Army Corps of Engineers (USACE) Quality Assurance (QA) acceptance.



George R. Spencer  
Project Manager  
USA Environmental, Inc.



## **APPENDIX E**

### **U.S. ARMY RESPONSES TO ILLINOIS ENVIRONMENTAL PROTECTION AGENCY AND UNITED STATES ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE DRAFT FINAL CLOSURE REPORT – SITES L2, L5, L23A, M3, M4, AND M12**



Response to Comments From the Illinois Environmental Protection Agency  
Letter Dated January 8, 2009  
On the Draft Final Closure Report  
For Site L2, L5, L23A, M3, M4, and M12

**Responses to Illinois EPA Comments**

Comment 1, RTC 1: Where in the text is this revision located? The text to Section 2.3.2 still does not definitely state the requested revision.

Response to Comment: Information regarding the sampling for thallium has been added in Section 3.4.3, last bullet before Section 3.4.4. In October 2008, a total of 21 discrete soils samples were collected and analyzed for Thallium at the PCN excavation utilizing another method (Method SW846-7841) which has lower reporting limits for the target metal and eliminates the matrix interference from other heavy metals present in the site soils. The original samples (JPL5-PCN2-1 through JPL5-PCN2-10) collected in August 2007 had elevated reporting levels and Thallium results above the lower remediation goal of 0.68 mg/kg utilizing method SW846-6010B. The additional soil analysis showed that Thallium was not detected in any of the samples above the lower remediation goal of 0.68 mg/kg. Therefore, no averaging was required.

Comment 2, RTC 4: The missing sections still haven't been included for review, the text states that they will be in the final Version. Illinois EPA will have to provide comments once the final version of the document is submitted.

Response to Comment: The Data Validation Report (DVR) was completed under a separate cover. The DVR will be included on a CD with the Final Closure Report.

Comment 3, RTC 6: This still needs to be addressed. When will the separate document be provided?

Response to Comment: See response to Comment 1, RTC-1. This supplemental information will be included in Section 3.4.3 of the Final Closure Report.

Comment 4, RTC 14: Where within the Data Validation Report (DVR) is this addressed?

Response to Comment: The following will be added as a new Section 2.3.7 in the DVR. "Some of the soil samples associated with the PCB analysis received a sulfuric acid cleanup in order to reduce the matrix interferences. These samples were diluted due to the sample matrix and therefore the reporting limits were adjusted to reflect these necessary dilutions. The adjusted reporting limits, however, did not always meet the remedial goals. The laboratory conducted a visual inspection of the chromatograms and noted that a non-target peak pattern was present; however the pattern did not match any of the Aroclors."



## **New Comments**

Comment 5, ES-1 and ES-2: When will the information be made available?

Response to Comment: Executive Summary, Page ES-1, fifth bullet, first two sentences. This bullet will be removed as the supplemental information from this additional sampling will be included into the Final Closure Report.

Page ES-2, Final Inspection of L5 – Will need to get this information from the USACE.

Comment 6, General, DVR: Please include a hard copy of the DVR main text in the Closure Report (CR).

Response to Comment: The DVR will be included as Appendix F in the Final Closure Report. The main text will be in hard copy with all Tables and Attachments on CD.

Comment 7, General, DVR: Please revise the CR table to include the flags due to validation so there is a comprehensive set of tables within the body of the CR.

Response to Comment: The Closure Report will be reviewed and updated to include any additional flags from the validation report.

Comment 8, DVR, Table C-1: There are two sample locations, JPL2-AP56(0.5) and JPL2-AP72(0.5) with exceedances for RDX. Were these two locations further excavated?

Response to Comment: The DVR covered all samples collected during the remedial activities. In review of the Confirmation Soil Sample Results (Table 3-4) and Figure 3-3 for Site L2, additional excavation was completed to address these two samples that exceeded the RDX limit. Only passing confirmation soil samples are presented in Table 3-4 and shown on Figure 3-3. Samples locations where further excavation was conducted due to sample exceedances were not included in the Closure Report.

Comment 9, DVR, Table C-1: This table includes validated data for the treatment windrows. Will this information is included in Bioremediation Reports, since the windrow sampling results were not included in the CR?

Response to Comment: The windrow sampling results were inadvertently left in this DVR. They will be removed. The samples are included in the Bioremediation Report DVRs.



**Response to Comments From the U.S. EPA Comments**  
**Dated March 2008**  
**On the Draft Final Closure Report, Sites L2, L5, L23A, M3, M4, and M12, Phase**  
**2 Remedial Action, Soils Operable Unit, Joliet Army Ammunition Plant**

The following comments were generated based on a review of the Draft Final Closure Report, Sites L2, L5, L23A, M3, M4, and M12, for the Former Joliet Army Ammunition Plant in Wilmington, Illinois (Closure Report). This review included evaluating the technical sufficiency of the Responses to EPA comments. Only those comments not adequately addressed have been included in this deliverable. An additional comment has also been included for Site L5 due to the new information presented in the March 2008 version of the Closure Report.

**GENERAL COMMENTS**

1. **Response to EPA General Comment 2:** The response to EPA's General Comment 2 and the revisions to the Closure Report are mostly adequate. Additional discussion has been provided for the deviations. However, there is insufficient information about the characterization of the northwest corner of the east-west burning pads. Please see the evaluation of the Response to EPA Comment 12 below for additional details regarding this issue, and revise the Closure Report accordingly.

**Response:** See specific comment response below.

Additionally, the final bullet point in Section 3.4.2 states that several samples were analyzed for total petroleum hydrocarbons (TPH). However, no conclusions have been presented. Revise the final bullet to state whether TPH was detected in the samples, and discuss the implications of any detections.

**Response, Page 3-8, Bullet 5:** The text has been modified to clarify. Samples were analyzed for TPH due to the diesel odor in the soil. The samples were taken from a small trench that was excavated to remove the fuel line that connected the popping furnaces with the fuel tank that fired them. No elevated levels were found with TPH analysis.

2. **Response to EPA General Comment 3:** The response to EPA's General Comment 3 is not adequate. The response states that additional discussion has been provided for the deviations from the approach to characterization sampling. However, EPA notes the following issues related to the characterization sampling approach:
  - a. Insufficient information has been presented about the characterization of the northwest corner of the east-west burning pads (Bullet 2, Page 3-8). This bullet states that the entire area was to be excavated to a depth of 8 feet, but based on observations and sampling, no contamination was observed. The methods for the additional characterization of the northwest area remain unclear. Please see the evaluation of the Response to EPA Comment 12 below for additional details regarding this issue, and



revise the Closure Report accordingly.

**Response:** See specific comment response below.

- b. Insufficient information about the polychlorinated naphthalene (PCN) composite sampling at L5 has been provided. Revise the Closure Report to explain and justify the use of composite sampling in Site L5. The justification should reference applicable guidance that was used to establish the composite sampling approach.

**Response, Page 3-10, Bullet 1:** The text has been modified to explain the sampling approach. Since there is no EPA sampling method for PCNs, the decision was made to use the method in place for PCBs, a similar contaminant, as originally planned for in the Phase II SAP. This decision was discussed and approved at the February/March 2007 PM meetings.

- c. Insufficient information has been provided about the source areas. Several deviations state that sampling was biased toward the anticipated source areas. However, these source areas have not been identified. Since the method of source identification has not been presented (e.g., visual observations, historical documents, etc.), it is not clear if the deviation from the gridded approach is appropriate. Revise the Closure Report to identify and describe the source areas that were sampled. Also explain why the biased approach to sampling yields results that are equally (or more) representative of results than would have been generated using a sampling grid.

**Response:** References to source areas has been removed from discussion of Site L2 as it was not a factor there. The approach to sampling in the northwest corner of L2 was focused 1. around the failing RI sample point, and 2. the edges of the area to be excavated to determine the necessity of excavating the entire area. Please see specific comment 12 response below for more details.

## **SPECIFIC COMMENTS**

1. **Response to EPA Comment 12:** The response is not adequate. Additional information has been incorporated into the second bullet on Page 3-8. However, the procedures and criteria for the characterization sampling in the northwest corner of the east-west burning pads are still not clear. For example, it is not clear how source areas were identified, and why what appear to be fewer samples were collected in the central portion of this area. It is also not clear why very small areas were excavated to depths of four and eight feet in the eastern portion of this area. Revise the Closure Report to describe the procedures and criteria used for the characterization sampling and the rationale for the excavations of small areas in the east-west burning pads area.



**Response Page 3-8, Bullet 2:** Text has been revised to better explain excavation rationale. The highly unstable soils in this area made excavating to 8 feet bgs impractical and hazardous. Wet, sandy soils were constantly caving in once a depth of approximately 4 feet was reached. No other areas during excavation at JOAAP exhibited similar hazards. Smaller and safer test pits were excavated around the NW corner section of L2 and sampled to better determine the limits of the contamination and try and reduce the area to be excavated. The area of the failing RI sample, plus 4 other test pits yielded no exceedences, therefore it was decided not to excavate the area because of safety concerns. In addition, the high permeability of the soil, along with the high rate of water flow makes the presence of contamination very unlikely.

2. **Response to EPA Comment 18:** The response is partially adequate. The comment response includes a revision stating that soils were handpicked during a visual sweep of the areas identified during the Phase 2-RD/RA. Revise the Closure Report to state who conducted the visual evaluations and also to discuss where the sulfur contaminated soils were noted.

**Response Page 3-13, 1<sup>st</sup> paragraph:** Text has been revised to clarify that MWH field Superintendent and QC personnel oversaw the removal of SRU7 soils by handpicking AND with the use of excavating equipment. The area of removal is shown on Figure 3-13 and is referenced in the text.

3. **Response to EPA Comment 22:** The response is not adequate. This comment stated that the use of X-Ray Fluorescence (XRF) data to confirm the extent of the excavations was a deviation from the RD/RA Work plan. The response states that five percent of the lead samples were sent to a laboratory for analysis. The response does not indicate whether these results supported the XRF data. Revise Section 3.6.3.2 to provide a comparison of the laboratory based lead data to the XRF data, and demonstrate the reliability of the XRF data for confirming that the remedial goals have been met.

**Response:** Use of the XRF for confirmation samples was in fact approved in the RD/RA Workplan, October 2005, Attachment C1.

4. **Response to EPA Comment 26:** The response is partially adequate. However, clarify what the low-level calibration standard is, how often it is checked, and whether it is used in calibration.

**Response:** The text has been modified to clarify. The PAH low level standard is 0.1 ng/ul. It is utilized and evaluated every time a new ICAL is analyzed and data processed.

5. **Response to EPA Comment 29:** The response is adequate; however, please revise the TechLaw contact from Terry Uecker to Terry Uecker Zdon.

**Response:** Change made as noted.



### **ADDITIONAL COMMENT**

**Section 3.4.3 Site L5, Page 3-10:** The first bullet point on this page states that 16 drums of munitions and explosives of concern (MEC) wastes were taken off-site for disposal. However, the bullet does not indicate whether additional investigation of MEC at Site L5 will be conducted. Since MEC was discovered during these remedial activities, it would appear that additional investigation should be conducted to determine the extent of MEC at Site L5.

**Response, Page 3-10, Bullet 2:** Incorrect terminology was used in this bullet point. The correct designation is munitions debris (MD). MEC would not have been transported and disposed of offsite. Munitions debris is essentially metal scrap with no explosive potential. The text has been changed to reflect this.

Additional investigation was deemed unnecessary by MWH and the Army. All MD was localized in one small area at the east end of the L5 ditch. UXO personnel screened the soil as it was removed in all directions until no further material was encountered. The horizontal and vertical limits of the MD have been determined and all material removed and disposed of. The text has been adjusted to clarify this.



**APPENDIX F**  
**DATA VALIDATION REPORT**



**APPENDIX G**

**USACE FINAL INSPECTION  
SEPTEMBER 18, 2009**



## Final USACE Inspection of Montgomery Watson Harza's Remediation Efforts at Joliet Army Ammunition Plant – Site L5.

On Friday, September 18, 2009, Mark Frueh and Brian Saintonge of the US Army Corps of Engineers conducted a final inspection of the remediation areas at Site L5 at the former Joliet Army Ammunition Plant. All remediation efforts had been completed by Montgomery Watson Harza (MWH) by early Fall, 2008.

Of the area concerning PCB/PCN contamination and of the area of Thallium suspected contamination, (see accompanying digital photo). The area has thriving vegetation growing and is deemed acceptable for all remediation efforts conducted under contract by MWH.



Facing West of the former PCB/PCN & suspected Thallium contamination area.

However, an area of approximate size of between two and three acres which had been remediated for explosive soil contamination at L5, although successfully completed for soil contamination – restoration of this area has not been successful. (See the following two digital photos). Since little to no organic soils had been placed over or added in the fill material, little to no vegetation has occurred in the last 18 months. Signs are evident



that some erosion has occurred, because of the relative level elevation of this area – eventual vegetative restoration will occur with time (estimated at 5 to 10 years).



Facing East-Northeast at Explosive Soil Contamination Area at L-5 (some erosion deposits are evident).





Facing Southwest – (eastern end of L5 remediation) – Little to No Vegetation Restoration has occurred since MWH clean-up of the Explosive Soil Contamination Area.